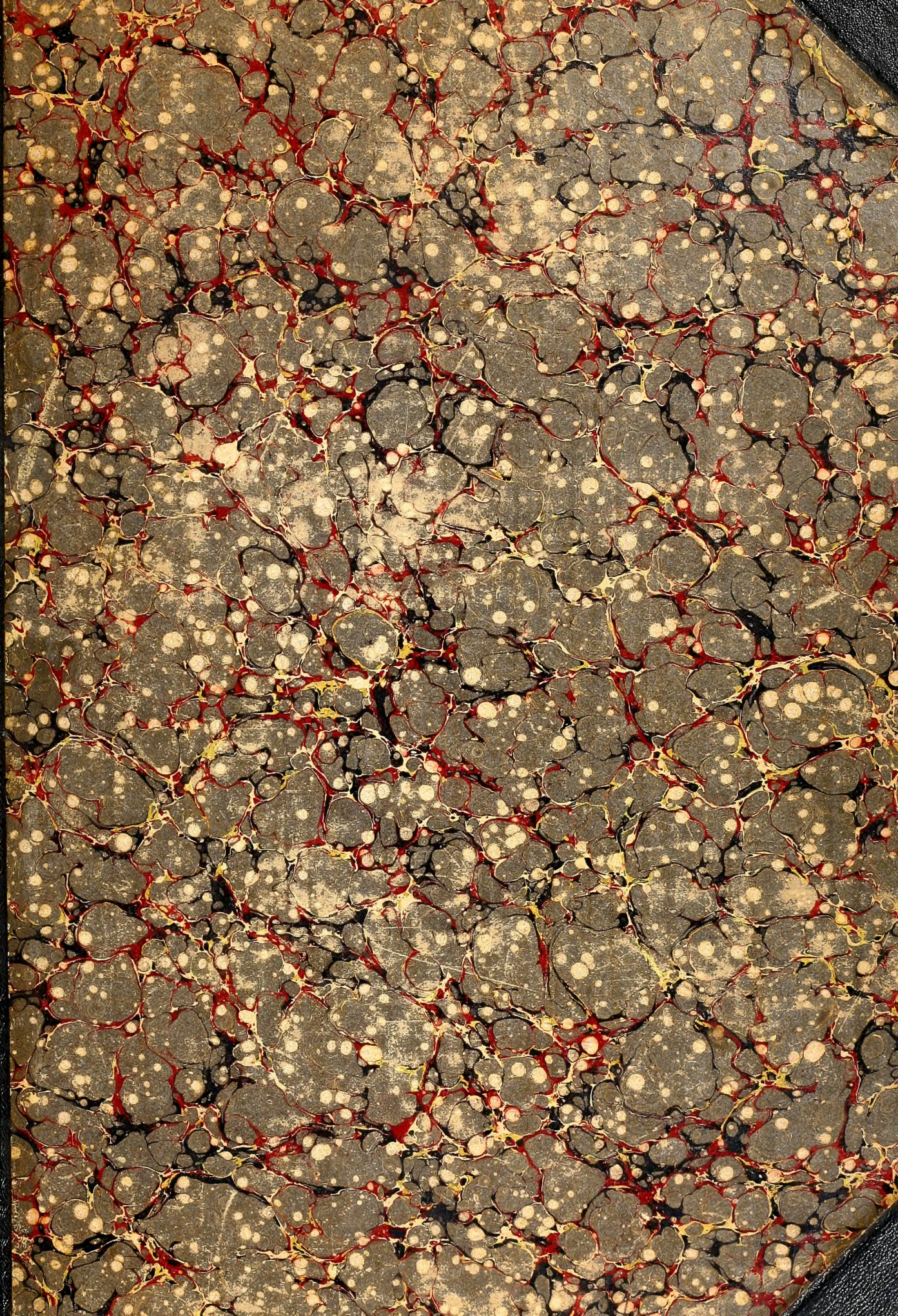


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# REVISION OF THE TENEBRIONIDÆ OF AMERICA, NORTH OF MEXICO.

By GEO. H. HORN, M. D.

The object of the following pages is two-fold—first, to afford a proper means of making known to science the results of four years field work in California and adjacent regions; and secondly, to bring before the student of our fauna as nearly a correct list with synonymy of all our species as possible, with short descriptions and synoptic tables, whereby all our known species can be readily recognised, rendering it necessary to refer only doubtful or new ones to those having typical collections for proper comparison.

The Tenebrionidæ commence a large series of coleopterous insects, of which the heteromorous tarsi constitute the most important as well as the most constant character; and although occupying such an important position in this Section of the great Order Coleoptera, it is neither peculiar, nor without exception.

In the family Trictenotonidæ, as well as in Silphidæ Staphylinidæ and Colydiidæ, we have instances of heteromorous tarsi, although in some instances the character is reversed, that is, the anterior tarsi are four jointed instead of the hind tarsi. Two species of Heteromera are said to have pentamorous tarsi (*Tanyrhinus singularis* Mann., and *Sepidium pradierii* Guérin.) and one genus, *Heterotarsus*, has the number of joints reduced by one in each tarsus, so that the anterior and middle tarsi are tetramorous, while the hind tarsi are trimerous.

The following characters are those which define all the genera and species known to me of the family Tenebrionidæ.

*Prosternum attaining the hind margin of the thorax, epimera never contiguous on the median line. Anterior coxal cavities closed behind. Tarsi heteromorous, penultimate joint never spongy beneath. Tarsal claws simple. First three joints of the abdomen connate. Elytra with distinct epipleuræ.*

Any heteromorous Coleopteron not possessing all of the above characters, must be referred to some other family. *Cossyphus* has the epimera of the prosternum contiguous along the median line, and the prosternum not attaining the hind margin of the prothorax, and must constitute a family apart and be placed at the head of that large primary division of the Order in which this peculiar formation of prosternum is always found, called by Dr. Leconte the Rhynchophora.

Even to the present time, many European entomologists persist in retaining *Boros* and

its allies among the Tenebrionidæ. Mr. Pascoe (Ann. and Mag. Nat. Hist. Ser. IV, Vol. III, p. 153,) renews the opinion, and while noting the fact that the anterior coxal cavities are open behind in *Pytho*, *Boros*, et al., appears to lay greater stress on the prominence of the coxæ themselves. I fear the more prominent, or rather more visible, character has engaged the attention of Mr. Pascoe, at the expense of the more important ones. In the above cited paper of Mr. Pascoe, as well as in others by Mr. Bates, on the Tenebrionide Fauna of Australia, etc., it is to be regretted that too little attention has been paid to some of our own genera, with which it is probable some of theirs are closely allied and perhaps identical. Many have been founded on characters of entirely too trifling moment, and genera have been multiplied to an extent only exceeded by late publications on the genera of *Cerambycidæ* and *Curculionidæ*. From their standpoint *Eleodes* in our fauna alone may be divided into a dozen, while each *Asida* might with equal propriety be called by a surname of its own.

Although the coxal cavities are never confluent, they are sometimes so narrowly separated by the prosternum as to allow the coxæ to become contiguous, as in *Dacoderus* and a new genus.\*

The classification adopted in the body of this paper is substantially that of Dr. Leconte, with such alterations as the further study of the family seems to indicate, and while the systems adopted by Leconte and Lacordaire are so widely and fundamentally different, the arrangement of the genera is very strikingly similar. In this arrangement one fact may be noticed more especially; the mentum in the leading genera of each sub-family attains a maximum, gradually diminishing in size as the more inferior types are reached, and while this is the case in each sub-family, the mentum in its greatest development in the three sub-families is gradually smaller. To illustrate; in the first sub-family the mentum is very large in the *Gnathosiini*, and minimum in *Dacoderini*; second sub-family, maximum in *Asidini*, minimum in *Coniontini*; third sub-family, maximum in *Blaptini* (and *Coelocnemis*), minimum in *Apocryphini* and *Helopini*; and while we have a maximum and minimum in each sub-family, so the *Tentyriidæ* have the mentum of maximum development, while the *Tenebrionidæ* of minimum. In a study of the family, I have often been struck with the remarkable parallelism which appears to exist between individual genera of many widely separated tribes. As I have been unable to consult scarcely a fifth part of the genera described, I cannot venture further than the mere hint above given.

Before entering on the details of the paper, I cannot omit mention of the many kind friends who have assisted me in the loan of specimens, &c.; firstly, Dr. Leconte, for the very free use of his cabinet and library; secondly, of Dr. Lewis, for many specimens, the

\* This genus is in the cabinet of my friend, Mr. Ulke, and in Washington, D. C., and, as Mr. U. is now abroad, I have not been permitted to study many of the species in his cabinet.



result of a Summer's trip to New Mexico; and of the members of the American Entomological Society, of Philadelphia, as well as the Society itself, for the kind access granted to their collections.

I have received valuable assistance from many kind friends, who have made collections in alcohol in various parts of our country, and kindly placed them at my disposal. To such I return sincere thanks.

1st. To Mr. Wm. M. Gabb, of the California Geological Survey, who made abundant and valuable collections in all parts of California, Oregon, Nevada, and Lower California, from Cape San Lucas to San Diego.

2d. To Dr. Cronkhite for valuable collections in Owens' Valley, California.

3d. To Capt. Jno. E. Hill, of California, for several interesting lots from Fort Yuma.

4th. To Dr. J. G. Cooper, for collections in the Sacramento Valley.

My own collections in the West were made principally in California, and extend throughout the whole length of the State, principally in the Sacramento and Owens' Valleys, Tejon, Yuma, Fort Crook, Surprise Valley, and in the Territories of Arizona and New Mexico, and at all places along the road and at any camps that may have been made on the journey.

This paper having been written with the view of aiding the American student of his own fauna, it has been the author's endeavor to be as explicit, as so intricate a subject can be made. Wherever it was possible, synoptic tables of species have been added, many of them prepared with considerable outlay of time and trouble. If this paper can in the least aid those whose collections are in disorder, in properly systematising their species and appreciating the difference between the genera and species, and above all, if it will succeed in preventing them, should they ever aspire to authorship, from creating genera and species unnecessarily, I will feel that I am amply repaid. And to those whose position will enable them to study the paper critically, it may be said that, if any errors either original or copied, be the means of stimulating any one to eliminate them, I think all will have abundant reason for rejoicing, and to these readers I respectfully request the perusal of Duval's *Tenebrionides*, p. 242, and Lacordaire, *Genera*, V., pp. 12 and 289.

In the following pages each species known in our fauna will be at least briefly noticed, and not merely references given, although the species may be well known. Some species of Say and Beauvois remain unrecognised, while all are probably known to us under other names. It is to be regretted that Mr. Walker, (Naturalist in Brit. Col. App.), has seen fit to publish a large number of our Oregon species, among them some *Tenebrionidæ*, as new. The descriptions are for the most part totally valueless, and, were it not for the intimate acquaintance all American students have with the fauna of that region, the species would have remained unrecognised until others, better appreciating specific characters

among Coleoptera, might have been induced to review his work and so describe the species that their correct synonymy could be properly ascertained. From the repeated study of his descriptions, I am fully satisfied that all the Tenebrionidæ, at least, are old species, some of them having been described for ten or twenty years.

In regard to the classification of the family but little need here be said. After a very careful review of all systems heretofore published, I am inclined to adopt that of Dr. Leconte, as giving in a more satisfactory manner the relations the tribes should occupy to each other. In a review of the succeeding pages, the reader will find the tribes numbered continuously, although in a fauna limited as is our own, these tribes must not always be considered as of equal value among themselves, nor even equivalents of those of similar designation in the work of Lacordaire. As the classification of the family on anything like a natural method has been the result of the labor of few students, and in comparatively recent times, it can hardly be supposed to be as firmly fixed as that of the Carabidæ and Staphylinidæ; therefore, the author has at times varied from any systems yet proposed, with the view of lessening the number of exceptional cases that must inevitably occur where any strict line of division is allowed to conflict with natural affinities.

The family Tenebrionidæ may be divided into three sub-families.

Hind margins of all the ventral segments corneous.

Meso-coxæ enclosed by the sterna; trochantin not visible. TENTYRIIDÆ.

Meso-coxæ open externally; trochantin visible. ASIDIDÆ.

Hind margins of the third and fourth ventral segments partly coriaceous; trochantin visible or not. TENEBRIONIDÆ.

#### Sub-Family TENTYRIIDÆ.

This sub-family comprises all those genera in which the ventral segments are entirely corneous, and the meso-coxæ enclosed by the meso- and meta-sterna, and with the trochantin consequently invisible. The mentum here attains its greatest development, and in many of the genera entirely hiding all the other parts of the mouth. The sides of the gula are usually prominent and applied directly against the sides of the mentum, so that no gular peduncle can exist. The tarsal vestiture is somewhat variable, in most of the genera the tarsi have very coarse, almost spinous hairs, and much more rarely silky pubescent.

The following table will serve to distinguish the tribes in our fauna.

Mentum large, concealing both maxillæ and ligula.

Episterna of metathorax very wide; front trilobed. EPIPHYSINI.

Episterna of metathorax narrow.



Front uni or trilobed.	
Body apterous; metasternum short.	GNATHOSIINI.
Body winged; metasternum long.	
Anterior tibiæ slender, with two spurs.	EPITRAGINI.
Anterior tibiæ with the outer apical angle prolonged and with a single spur.	CNEMODINI.
Front broadly rounded.	THINOBATINI.
Mentum large, concealing either ligula or maxillæ, never both;	
Tibial spurs distinct.	BATULIINI.
Tibial spurs very minute.	
Anterior coxæ widely separated.	
Eyes transverse, finely granulated.	ZOPHERINI.
Eyes rounded, coarsely granulated.	USECHIINI.
Anterior coxæ narrowly separated;	
antennæ 11-jointed.	STENOSIINI.
Anterior coxæ contiguous;	
antennæ 10-jointed.	DACODERINI.

## TRIBE I—EPIPHYSINI.

Body short, convex, apterous; epistoma trilobed, labrum prominent; mentum very large, entirely filling the gular cavity; ligula and maxillæ concealed; thorax very short, anterior angles prominent, acute; elytra globose, sides embracing widely the flanks, epipleuræ narrowing; coxæ widely separated, the posterior transverse; prosternum closely fitting to the mesosternum. Tarsi slender, sparsely ciliate with long hairs.

This tribe contains in our fauna but one genus.

EDROTES, *Lec.*

*Edrotes*, *Lec.*, *Ann. Lyc.* V, 141.

*E. rotundus*, Say, (*Pimelia*) *Journ. Acad.*, 3,251; *Lec. (Edrotes) Ann. Lyc.* V, 141. *Lac. Genera*, Pl. 48, fig. 2.

Sub-opaque, coarsely but sparsely punctured and sparsely clothed with reddish hairs.

Length .25–.30 inch.

Occurs rather abundantly on the Plains of Kansas and Nebraska.

*E. ventricosus*, *Lec.*, *Ann. Lyc.* V, 141; *Lac. Genera*, Pl. 48, fig. 3; Thomson, *Arcana Naturæ*, Vol. I, Pl. XII, fig. 8.

Shining, more finely and sparsely punctured and sparsely clothed with greyish hair.

Length .41 inch.

Occurs in the Desert region of California east of the Sierra Nevada, and in similar regions of Arizona and Nevada.

## TRIBE II—GNATHOSIINI.

Body variable in form, apterous; epistoma in our genera with at least a prominent middle lobe, labrum prominent; mentum large; ligula and maxillae concealed; pro- and mesosternum not contiguous. Tarsi variable in vestiture.

Our genera may be arranged—

Intercoxal process of abdomen broad, truncate.

Pronotum continuous with the flanks; middle lobe of epistoma short, broadly emarginate,  
lateral lobes very prominent. CRANIOTUS.

Marginal line of thorax distinct.

Mandibles toothed above. TRIOROPHUS.

Mandibles not toothed above.

Hind tarsi with first joint equal to 3—4. STIBIA.

“ tarsi with first and last joints equal. TRIPHALUS.

Intercoxal process of abdomen narrow, acute.

Middle lobe of epistoma rounded; eyes with superciliary ridge. TRIMYTIS.

Middle lobe of epistoma truncate; eyes with superciliary ridge. CRYPTADIUS.

Middle lobe of epistoma emarginate; eyes without “ “ AUCHMOBIUS.

The last three genera may be distinguished from the preceding genera by their robust form. The body is convex, and in two genera quite globose. The sides of the thorax are regularly rounded and narrow gradually from the basal angles. The base of thorax is as wide as the base of the elytra. The form of the body is therefore regularly oval. The head is also less prominent and more transverse than in the preceding genera of the tribe.

CRANIOTUS, *Lec.*

*Craniotus*, Lec., Ann. Lye. V, 142.

*C. pubescens*, Lec., Ann. Lye. 5, 142, the only species of the genus known.

The genus may be readily distinguished from all others of the tribe by the very prominent triangular lateral lobes of the head. The median lobe is very short and broadly emarginate, labrum prominent, feebly emarginate, anterior angles rounded. The epipleuræ and the elytra are connate without trace of suture. The metasternal parapleuræ are broad and without epimera. The antennæ are longer than the head and thorax, third joint equal to fourth and fifth. The last joint is small, conical and connate with the preceding, so that the antennæ appear to have but ten joints. The last joint of the maxillary palpi is broadly triangular, the apical side larger in the male, and much more narrow in the female. *Craniotus* is not rare on the Maricopa desert of Arizona under fallen trunks of *Cereus giganteus*, from March to November.

Length .45–.50 inch.

TRIOROPHUS, *Lec.*

*Triorophus*, Lec., Ann. Lye. V, 141.

In *Triorophus* the mandibles have a superior tooth which clasps the sides of the promi-



nent middle lobe of the epistoma. This lobe is rounded in front, more acute at its middle, emarginate at the sides, and with a very convex surface, so that the front is umbonate. The labrum is not visible. The maxillary palpi have nearly equal joints, the last being feebly triangular. They are alike in both sexes. The metasternal parapleuræ are narrow, the elytral epipleuræ narrow, but separated by a distinct line.

The species of this genus may be tabulated—

Head smooth, thorax transverse, frontal umbone large.	<i>nodiceps</i> .
Head coarsely punctured, thorax transverse, frontal umbone moderate.	<i>punctatus</i> .
Head punctured or sulcate, thorax quadrate, narrower behind.	
Elytra shining.	<i>lævis</i> .
Elytra opaque, pubescent.	<i>subpubescens</i> .

*T. nodiceps*, Lec., Proc. Acad. 6, 447; Thomson, Arcana, Vol. I, Pl. XIII, fig. 7.

This is our largest species, and may be distinguished by the almost entirely smooth head, the transverse and finely and densely punctured thorax. The frontal umbone is more convex than in any of our other species. Found in Texas.

Length .30 inch.

*T. punctatus*, Lec., Ann. Lyc. 5, 142.

But one specimen of this species is known, a single dead individual having been found at Vallecito, Cal. It is stouter and more robust than the other species. The head is coarsely punctured, and the thorax transverse coarsely and confluent punctured.

Length .25 inch.

*T. lævis*, Lec., Ann. Lyc. 5, 141; *rugiceps*, Lec., loc. cit.; Lac. Genera, pl. 48, fig. 4.

This is the most abundant of our species. Specimens occur from Tejon, Cal., to the western base of the Rocky Mountains in Arizona. The thorax is nearly as long as broad and notably narrower behind, and has its upper surface finely but distantly punctured. The head varies in sculpture; in some the punctures are very fine and distant, in others the head is sulcate by the confluence of coarse punctures. These two forms constitute respectively *lævis* and *rugiceps*. I have had opportunity of examining many specimens, and find every shade of variation from one to the other.

Length .25 inch.

*T. subpubescens*, brownish black, sub-opaque. Head coarsely and densely punctured and longitudinally finely sulcate; umbone moderately prominent, finely punctured. Thorax slightly broader than long, sides moderately rounded. Surface convex, coarsely and densely but not confluent punctured. Head and thorax with sparsely placed short yellow hairs. Elytra oval, moderately convex, faintly striato-punctate with the interstices with two rows of very faint punctures, sparsely pubescent with the short hairs arranged between the rows of larger punctures. Body beneath paler. Thorax coarsely and densely punctured, meso and metasterna very coarsely punctured, abdomen finely and sparsely punctured. Length .30 inch.

Differs from all other preceding species by its opaque surface, sparsely clothed with pubescence. Our other black and shining species are covered with a white dust or pulverescence easily removed by handling. This same dust-like coat may be noticed on many of our smooth Tenebrionidæ, and the more especially among those of the higher tribes.

STIBIA, n. g.

This genus differs from *Triorophus* by the following characters: Front trilobed, middle lobe triangular slightly deflexed, lateral lobes broadly rounded. Tarsi pubescent and spinous beneath. Eyes with distinct superciliary ridge, rounded and feebly emarginate. Mandibles without tooth on upper surface.

The form of the front in the unique species of this genus is entirely different from anything seen in the tribe. The lateral lobes are broadly rounded, the middle slightly deflexed, forming an angle with the rest of the front, the ridge being continuous with the sides of the front, so that when the front is viewed from above it appears broadly rounded as in the next tribe, and thus approaches the form seen in foreign genera allied to *Tentyria*.

*S. puncticollis*, black shining, head coarsely and confluent punctured, thorax moderately convex, coarsely and densely punctured, one-half broader than long. Sides broadly rounded, margin acute; angles distinct; anteriorly feebly emarginate, posteriorly feebly sinuate. Elytra convex, elongate, oval, with nine rows of strong punctures on the disc, one marginal row and a short scutellar row of 3 or 4 punctures. Beneath coarsely and densely punctured. Legs ferruginous, brown. Length .32-.38 inch.

Peninsula of California. Collected by Mr. Wm. M. Gabb, to whom I must again acknowledge indebtedness for collections, made in all parts of California, kindly placed at my disposal.

TRIPHALUS, *Lec.*

*Triphalus*, *Lec.*, *New Species*, 104.

*Triphalus* differs abundantly from any of the other genera already noted. The form of front approaches that seen in *Trimytis*. The middle lobe is rather triangular with the greatest dimension transverse, the sides are broadly rounded; the lateral lobes are very distinct and separated from the median by a well defined incisure. The mandibles are not toothed above. The tarsi are very distinctly pubescent beneath, more so than in any other genera of this tribe, and with the first joint of the hind tarsi rather shorter than the last.

*T. punctatus*, *Lec.*, *New Species*, 104.

The only species known, is brownish in color, with head and thorax strongly punctured. The elytra have rows of large punctures in lines arranged in eight discoidal and one marginal series, with a short scutellar row.

Lower California. Collected by Mr. Xantus.

Length .26-.33.

TRIMYTIS, *Lec.*

Trimytis, *Lec.*, Ann. Lyc. V, 141.

With this genus commences a series of an oval, rather robust form. In them the thorax is as wide at base as the base of the elytra. The intercoxal process of the abdomen is triangular and acute. The form of front in Trimytis is nearly that seen in the preceding genus. The middle lobe is broader with sides less convergent, and truncate, the lateral lobes are small, rounded and separated from the middle lobe anteriorly by a fissure or incisure, as in Triphalus. The eyes have slight superciliary ridges, more developed in front of the eyes than above them.

*T. pruinosa*, *Lec.*, Ann. Lyc. V, 141. Form elongate oval, convex, glossy black. Head and thorax densely but not very coarsely punctured. Thorax one-half broader than long, sides slightly rounded, gradually narrowing from hind angles, which are rectangular, apex emarginate, base truncate, anterior angles prominent acute. Elytra oval truncate at base, scarcely wider than the thorax at base, with eight discoidal and one marginal row of rather fine punctures becoming obsolete at the apex; the interstices have a single row of very fine punctures. Thorax beneath rather coarsely but not densely punctured, abdomen finely and very distantly punctured. Length .25 inch.

Found at times rather abundantly under stones on the plains west of Missouri. When recent the individuals have a pruinose appearance, or as if covered with a fine dust-like efflorescence.

Length .20-24 inch.

*T. pulverea*, n. sp. Piceous, sub-opaque, elongate, oval, moderately convex. Head finely sulcate from the longitudinal confluence of punctures. Thorax one-half broader than long, convex, moderately, coarsely and densely punctured, sides moderately rounded. Base faintly sinuous, angles rectangular. Anteriorly slightly emarginate; anterior angles not very prominent. Elytra oval truncate at base, with eight discoidal rows of rather large punctures and one marginal; interstices slightly convex with a faint series of punctures. Thorax beneath very coarsely and densely punctured. Abdomen less coarsely and not densely punctured. Length .20 inch.

This species differs considerably from the preceding, notably in the form of the thorax. The thorax is rather narrower at base than at its middle, the sides are therefore more rounded than in *pruinosa* and the anterior angles are much less prominent.

As compared with *pruinosa*, this species has more elongate and less convex elytra. The rows of punctures are better defined and the punctures more closely placed, so that the elytra are almost striate. When recent, this species is covered with a fine dust, as in *pruinosa*. I found but few specimens of this species at Camp Grant, Arizona, during the Winter, under stones, etc.

*T. abnormis*, chestnut brown, sub-opaque; head rather densely and coarsely punctured; thorax broader than long, narrower at base than the elytra; disc moderately convex, coarsely and moderately densely punctured, especially toward the margins; apex feebly emarginate, base slightly sinuate, sides rounded in front, gradually narrowed to the hind angles, which are rectangular. Elytra elongate oval, subparallel in front, moderately convex with striae of finely muricate punctures, confused at base and less distinct at apex. Body beneath coarsely but not densely punctured; abdomen paler, more shining, and scarcely at all punctured.

Length .26 inch.

This species differs not only from all its congeners, but from the group of genera, in reproducing a form of thorax more nearly allied to Stibia; all the other species of the



genera of this group have the thorax broadest at base and equal to the elytra, while the thorax in the present species is narrower at base than at apex. It cannot be referred to any other genus, and this one character alone appears really too trifling to admit of the formation of a new one. A single specimen collected by the expedition in Nevada, under Clarence King.

CRYPTADIUS, *Lec.*

*Cryptadius*, *Lec.*, *Ann. Lyc.* V, 140.

Epistoma with the middle lobe produced truncate, labrum slightly prominent, entire. Maxillary palpi slender, eyes subemarginate, with a distinct superciliary ridge. Mentum large, transverse, entirely filling the buccal cavity. Antennæ 11-jointed, slender, slightly thickened externally; 3d joint larger. Legs slender, bicalcarate. Anterior tibiæ with the outer angle prolonged. Posterior coxæ approximate.

*C. inflatus*, *Lec.*, *Ann. Lyc.* V, 140. Black, very convex head and thorax, finely punctured. Thorax short, narrower anteriorly, sides rounded, slightly margined. Elytra finely muricato-punctate. Base of antennæ and feet brownish. Length .23 inch.

A single specimen was found at San Diego, and subsequently lost while being sent abroad for study. No other specimens have since been found.

AUCHMOBIUS, *Lec.*

*Auchmobius*, *Lec.*, *Ann. Lyc.* V, 140.

Epistoma with the middle lobe produced, deeply emarginate, and with convergent sides, lateral lobes broadly rounded. Labrum moderately prominent, feebly emarginate. Maxillary palpi slender, last joint broader oval. Eyes feebly emarginate and without superciliary ridge. Antennæ with the first three joints nearly equal and longer than the others; joints 4-10, gradually increasing in breadth, slightly flattened, last joint oval, acute and smaller than the preceding. Anterior tibiæ with the outer angle prolonged. Tarsi with spinous hairs beneath.

This genus and the preceding have been removed from the group *Thinobatini*, in which they were placed by Dr. Leconte, on account of the prominence of the middle lobe of the epistoma. In the tribe named, the epistoma is very broadly rounded and without any undue prominence of either of the lobes, which are faintly indicated by obsolete sutures.

*A. sublævis*, *Lec.*, *Ann. Lyc.* 5, 140.

This insect is of very robust form, broadly oval, and very convex, nearly smooth and shining, with few fine punctures on the head and thorax, and rather coarse ones on the elytra. It appears to occur in many parts of California, though rare everywhere. Specimens occurred most abundantly in Owens' Valley, one at Tejon, another in the Southern Coast Range. It varies in size from .3-.4 inch; and one from the latter locality is smoother and of a longer oval.

## TRIBE III—EPITRAGINI.

Body generally elongate oval, winged; epistoma with at least a prominent middle lobe in our species; labrum prominent; mentum large, entirely filling the gular cavity; elytra with narrow epipleuræ; metasternum long; parapleuræ narrow; middle coxæ entirely enclosed by the sterna, hind coxæ approximate, intercoxal process of abdomen acute; tarsi usually pubescent beneath.

Than this tribe there is probably no other more difficult of position; each genus possessing characters peculiarly its own, yet all are connected by many points of structure, rendering the tribe at least as natural as any of those which precede. Composed originally in our fauna of but one well defined genus, with characters unknown in any other preceding or following it in the Tentyriidæ, it was not a matter of any great trouble to assign it to a position in an analytical table. The addition of one other genus renders its study no less difficult in our fauna than Lacordaire found it in the genera of the whole world.

Two genera alone compose this tribe in our fauna, and may be readily distinguished from each other as follows:—

Mesosternum divided, receiving the prosternum.	EPITRAGUS.
“ not divided, prosternum not prolonged.	SCHOENICUS.

EPITRAGUS, *Latr.*

*Epitragus*, *Latr.*, *Hist. Nat. Crust. et Ins.* X, p. 322.

The characters of this genus have been so thoroughly exposed by Lacordaire (*Genera des Coleopteres* V.) that it is unnecessary to repeat, while any characters peculiar to our species, or not heretofore noted, will be developed either in the table which follows or in the description of each species. For a long time but one species was known in our fauna; our collections now contain eight, either described within a very few years or now for the first time made known. The epistoma varies considerably in outline and to the same extent in our species as has been already noticed in foreign ones.

Our species may be arranged as follows:—

Thorax narrower than elytra; supra-orbital ridge distinct.	submetallicus.
Thorax as wide at base as elytra,	
Thorax dissimilâr in ♂ and ♀.	
Anterior angles of thorax very acute and more or	acutus.
less prominent.	arundinis.
	canaliculatus.
Thorax similar in both sexes.	
Eyes with supra-orbital ridge; elytra not pubescent.	pruinusus.
Eyes without “ “ ; elytra pubescent.	

Elytra emarginate at apex.

dentiger.

Elytra entire at apex.

tomentosus.

plumbeus.

*E. submetallicus*, Lec., Proc. Acad. 7, 224.

This is the largest as well as the most aberrant of our species. The thorax is narrower at base than the elytra, the sides parallel behind the middle, anteriorly broadly rounded, anterior angles not prominent, but obtuse. The head is sub-quadrate. The epistoma strongly trilobed, middle lobe rounded and prominent, lateral lobes very prominent and acute with an emargination between them and the middle lobe. The sides of the epistoma in front of the eyes do not converge, and the head thus assumes a more nearly sub-quadrate form than in any other of the species. The eyes are very convex and have a strong supra-orbital ridge. The characters above given seem to be sufficient for generic separation. Genera among Tenebrionidæ threaten to become very numerous, according to the value at present assigned to characters, and I therefore prefer to indicate as few as possible consistent with anatomical variations.

*E. acutus*, Lec., New Species, 373, p. 108. Texas, Kansas and Mexico.

Length .46-.50 inch.

*E. arundinis*, Lec., New Species, 374, p. 108. Middle States, near the coast.

Length .40 inch.

*E. canaliculatus*, Say, Long's Exped. 2, 281. Colorado, New Mexico and Arizona.

Length .40-.45 inch.

These three species have been so thoroughly described and compared, (Lec. loc. cit.) that nothing further need be said. The form of epistoma varies sufficiently to enable each species to be recognised by it. The middle lobe is most prominent in the first two, broadly rounded in the third. The lateral lobes are more prominent in the second and least evident in the first; in all the sides of front are slightly convergent. The thorax is dissimilar in the sexes. In the male the thorax is slightly flattened at the middle of the disc, bounded by two slightly elevated ridges, between the ends of which the anterior margin of the thorax is emarginate. The anterior angles in all three species are very acute and prominent.

*E. pruinus*, rufo-piceous, shining, with scarcely any metallic lustre, elongate oval convex, surface moderately, coarsely and not densely punctured, elytral punctures not in striae. Eyes with supra-orbital ridge limited within by a distinct longitudinal groove. Thorax broader than long; anteriorly, feebly emarginate, angles rectangular, sides feebly rounded from the base, marginal line slightly convex downwards, base feebly sinuate, angles scarcely acute. Beneath, very coarsely and sparsely, abdomen finely and densely punctured, and with a very sparse and short pubescence. Length .48 inch. When recent, covered with a fine cinereous efflorescence.

Collected by myself in Owens' Valley, Cal.; Arizona, Coll. Lec.

With this species commences a series in which the thorax is similar in both sexes, and



the anterior angles of the thorax are less acute and prominent than in the three preceding species. From *canaliculatus*, with the female of which it may be confounded, it may be readily distinguished by its coarser and less dense punctures, by its color and by the strong supra-orbital ridges with the longitudinal groove within.

*E. dentiger*, dark æneous, elongate oval convex, surface not coarsely and very sparsely punctured. Thorax broader than long, narrowed in front, feebly emarginate anteriorly, sides feebly rounded from the base, angles acute, base strongly sinuate. Elytra with cinereous pubescence arranged in irregular patches, apex apparently emarginate, marginal line of elytra not extending to apex, but terminating in a small tooth near it. Base of elytra emarginate and with a faint impression within the humeri. Beneath, finely punctured and sparsely covered with cinereous pubescence. Length .46-.48 inch.

Not rare at Camp Grant, Arizona, under the bark of mesquit. May readily be distinguished from all the species by the peculiar arrangement of the pubescence, as well as by the apparent emargination of the elytra (when viewed from above) caused by the abrupt termination of the marginal line of the elytra in a small tooth near the apex.

*E. tomentosus*, Lec., N. S. 376, p. 109. Florida. Length .40 inch.

*E. plumbeus*, Lec., N. S., 375, p. 109.

These two species have the thorax much more transverse and with less evident anterior angles, than any of the preceding species. From each other they may be readily distinguished by the characters in the table, as well as by those given by their author. *E. plumbeus* has more rugose elytra than any other species.

Length .40 inch.

Occurs in the Trans-Mississippi region.

The Epitragi of the whole Western Continent appear to need a thorough revision, no monograph to my knowledge having ever been published. From the small amount of study given to the species foreign to our fauna, the groups appear sufficiently well marked and the species so abundantly distinct, that the task would prove by no means a difficult one to any student with large series of specimens.

#### SCHOENICUS, *Lec.*

*Schoenicus*, Lec., New Species, p. 109.

*S. puberulus*, Lec., loc. cit. p. 110.

The description of this insect has been so recently published, that further comments are unnecessary.

Length .34 inch.

Found in Georgia, Florida, and New Jersey (Cab. Ent. Soc).

## TRIBE IV—CNEMODINI.

Mentum large, completely filling the gular space, lateral processes of gula triangular, applied against sides of mentum. Front with a prominent middle lobe completely concealing the labrum. Prosternum not produced. Mesosternum short, not prominent between the coxæ; coxæ entirely enclosed by sterna, trochantin visible. Metasternum long, (body winged) parapleuræ parallel. Intercostal process of abdomen acute. Tarsi with two rows of short spine-like hairs. Legs slender, anterior with the apical angle produced and with a single short spur. Antennæ 11-jointed, last joint oval acuminate.

CNEMODUS, *Horn.*

Mentum large, transverse, concealing maxillæ and ligula, hexagonal, rounded in front. Labrum concealed. Mandibles deeply emarginate and with an acute tooth at tip, and deeply grooved on their outer face. Maxillary palpi short, first joint obconical and larger, second shortest, last oval. Front with a prominent middle lobe, with a reflexed margin and emarginate, sides of front broadly rounded; head short, broader than long, eyes prominent and coarsely granulated. Antennæ equalling half the length of body, rather slender, slightly thicker at tip, glabrous; joints nearly equal in length, except eleventh, which is shorter, oval and acuminate at tip; joints thickened at distal extremity. Thorax slightly transverse, somewhat narrower than the elytra. Scutellum triangular, longer than wide. Epipleuræ extending to the tips of elytra, narrow, anteriorly badly defined. Legs slender, tarsi long, slender, exceeding in length their respective tibiæ; joints slender, cylindrical, last joint longer. Anterior tibiæ flattened, external apical angle prolonged, and with an acute tooth at middle of external edge, and with a single spur.

With the above characters I define a tribe and genus having nothing known to me, allied to them. In form the unique species resembles *Hypselops*, Sol., and it is possible that this South American genus should be associated with the one now under consideration. So many curious characters are found blended in this insect, that it is really difficult to tell to which most prominence should be given. The legs bear a striking resemblance to those of some of our Lamellicornia, as *Macroductylus* or *Dichelonycha*.

C. testaceus, yellowish testaceous, head obtuse, as long as broad, moderately coarsely punctured between and in front of the eyes. Thorax wider than long, convex, sides broadly rounded, anteriorly feebly emarginate, angles obtuse, posteriorly truncate angles distinct, disc nearly smooth, moderately shining, more coarsely punctured toward the lateral margins. Marginal line scarcely distinct, pronotum almost continuous with the flank. Elytra elongate, subparallel, twice as long as head and thorax, surface shining, and densely aciculate punctured, humeral angles distinct, obtuse. Beneath faintly and sparsely punctured and sparsely clothed with yellowish hairs. Length .32, width .11 inch.

The whole surface of the body appears to have been, when recent, covered with very short, sparsely placed, sub-erect hairs. Those on the under surface of the body are short,

sparse and recumbent, except upon the prosternum, where they are much longer and erect. For the unique of this interesting species I am indebted to Capt. John E. Hill, of the California Volunteers, to whose industry, exercised under the excessive heat of the Summer at Fort Yuma, I owe many fine species.

TRIBE V—THINOBATINI.

Body more or less elongate oval, with or without wings. Epistoma broadly rounded, without prominent middle lobe. Mentum large, concealing the parts above. Middle coxæ without trochantin, coxæ enclosed by sterna. Intercostal process of abdomen acute. Tarsi ciliate beneath.

As here recognised but two genera constitute the tribe, as follows :

Anterior tibiæ with outer angle prolonged.	EURYMETOPON.
“ “ truncate at tip.	EMMENASTUS.

The character made use of by Lacordaire for defining the groups of genera of the tribe, appears to be of no value whatever, species occurring in both our genera with and without wings.

EURYMETOPON, *Esch.*

Eurymetopon, Esch., Zool. Atl. IV, p. 8.

In this genus the apical angle of the anterior tibiæ is prolonged and acute, and the eyes have a well defined supra-orbital ridge.

Our species are as follows :

Margin of front continuous.	Winged.	<i>rufipes</i> .
	Not winged.	<i>convexicolle</i> .
		<i>bicolor</i> .
Margin of front with a slight notch on each side.		
Anterior tibiæ scarcely serrate, winged.		<i>punctulatum</i> .
		<i>sodalis</i> .
Anterior tibiæ distinctly serrate, winged.		<i>serratum</i> .

*E. rufipes*, Esch., Atlas IV, p. 8; pl. 18, fig. 1; *abnorme* Lec. Ann. Lyc. 5, 138.

Not rare under mesquit bark, Arizona.

The synonymy is determined from a duplicate of Eschscholtz's type in the cabinet of Dr. Leconte, who described his species under the impression that *rufipes* was apterous.

Length .30-.35 inch.

*E. convexicolle*, Lec. loc. cit.

Very distinct by its much more robust form, shorter, and apterous. Is not rare under stones everywhere in California.

Length .30 inch.



*E. bicolor*, elongate oval, convex, head and thorax brownish ferruginous, remainder of body black. Head densely and coarsely punctured, more sparsely near the occiput. Thorax transverse, one-half broader than long, slightly narrower in front, densely and coarsely and at the sides confluent punctured; anteriorly feebly emarginate angles not prominent; posteriorly bisinuate angles acute, moderately prominent; sides broadly rounded from the base to apex. Elytra black, oval, closely aciculate punctured in striae, interstices more finely punctured. Prosternum very coarsely and confluent punctured, pectus and abdomen coarsely and moderately densely punctured, legs and antennae ferruginous. Length .26 inch.

Quite distinct from *convexicolle* by the characters above given. The hind angles are more acute and prominent than in any other of our species. Specimens rarely occur in which the entire color is black. It is also more robust than the species already referred to.

*E. punctulatum*, Lec., N. Spec., 366, p. 105.

One of the most singular species of the genus in several characters. The penultimate abdominal segment in the male is short and broadly emarginate, as in the other species. The same segment in the female has a deep emargination each side of the middle, leaving a central acute tooth or lobe extending to the middle of the last segment. In this and the following species the line of the front is not continuous. On each side of the front at the termination of the supraorbital ridge, is a slight notch, being in this genus the last trace of the trilobed front seen in all the preceding genera.

Length .27 inch.

*E. sodalis*, alate, brown, scarcely shining, elongate oval, head coarsely and densely, thorax less densely punctured. Thorax broader than long, sides broadly rounded, scarcely narrower in front, angles obtuse. Elytra aciculate punctured in distinct striae. Beneath very sparsely punctured. Feet, palpi, antennae and margin of front paler. Length .22-.24 inch.

Not rare in Owens' Valley, and occasionally found at Fort Yuma, California.

Differs from the preceding in having the sides of the thorax regularly rounded, scarcely rounded anteriorly, and by the anterior angles being obtuse, as well as in the absence of the peculiar sexual characters of the preceding.

*E. serratum*, Lec., N. S. 367, p. 106.

This species has the anterior tibiae distinctly and, for its size, strongly serrate.

Length .12 inch.

*E. ochraceum*, Esch., loc. cit.

Is unknown to me. I suspect it to be an immature specimen of *convexicolle*, Lec.

#### EMMENASTUS, Motsch, (emend. Lec.)

*Emmenastus*, Motsch., Bull. Mose. 1845. 1, 75.

Regarding this genus there may yet be room for some doubt. Mannerheim states that *E. rugosus*, Motsch., the type of the genus, is merely a specimen of *Blapstinus pulverulentus*, while in the cabinet of Dr. Leconte a specimen of *Coniontis subpubescens* bears

the name of *E. rugosus*, from the hand of Motschulsky. While rejecting the typical species to the doubtful list, the genus must be retained, an illustration of the prediction of a genus by an author who at the same time commits a specific blunder in doing it.

Our species thus far known, are as follows:

Winged species—metasternum long.

*t e x a n u s*.

*l o n g u l u s*.

Apterous species—metasternum short.

Larger species; fuscous or ferruginous.

*p u n c t a t u s*.

*s u b o p a c u s*.

*p i n g u i s*.

Small species; black, with paler legs.

Margin of thorax sub-parallel behind middle; angles rectangular.

*a t e r*.

Margin of thorax sinuate near hind angle, angle acute.

*a c u t u s*.

“ “ “ rounded and gradually narrowing to apex.

*o b e s u s*.

Margin of thorax rounded, wider at middle, angles obtuse.

*o b t u s u s*.

*E. texanus*, Lec., N. Spec. 372, p. 108. Texas. Length .30 inch.

*E. longulus*, Lec., Ann. Lyc. 5, 138. (Eurymetopon) Southern Cal. and Arizona.

This species differs from the preceding in having the base of the thorax much less distinctly sinuate, angles more obtuse. The surface of thorax at middle is very sparsely and at the sides confluent punctured, while in *t e x a n u s* the surface is densely and very evenly punctured.

*E. punctatus*, Lec., N. Spec. 368, p. 106. Lower California.

Recalls the form of *Eurymetopon rufipes*. Length .30-.37.

*E. subopacus*. Elongate oval, subopaque, moderately convex, head densely and coarsely punctured; thorax coarsely and moderately densely punctured, punctures more dense at the sides; wider than long, narrowed in front, anteriorly emarginate, posteriorly truncate, sides feebly rounding from the base, angles obtuse. Elytra distinctly punctured in striae, interstices flat, subopaque and smooth. Beneath paler, prothorax and pectus densely and coarsely punctured, abdomen not coarsely and moderately punctured. Length .35 inch.

Found at Fort Grant, Arizona, under stones. Third much more convex than *punctatus* and more elongate and less obese than *pinguis*.

*E. pinguis*. Lec., N. Spec., p. 107. Lower Cal.

A very robust *Coniontis*-like form.

Length .30 inch.

*E. ater*, Lec., Ann. Lyc. 5, 139. (Eurymetopon.) California.

Black, with brownish or ferruginous legs, regularly oval and convex. Thorax with the sides parallel behind the middle and with the angles rectangular. Length .20 inch.

*E. acutus*. Black, subopaque, elongate oval, convex. Head and thorax densely and coarsely punctured. Thorax broader than long, narrower at apex, base truncate, sides broadly rounded anteriorly, sinuate near hind angles, which are acute. Elytra oval, punctured in irregular striae, truncate at base, humeral angles acute and prominent. Beneath coarsely and not densely punctured. Length .19 inch.

Nebraska, collec. Leconte. Can with difficulty be distinguished from *ater* except by the margin and angles of thorax.

*E. obesus*, Lec., Ann. Lyc. 5, p. 138 (Eurymetopon); *convexus*, Lec., N. Spec. 3, p. 107.

I unite the above two species, being unable to discover any difference save a little more rounding of the sides of thorax.

From California, New Mexico and Nebraska. Length .20-.26 inch.

*E. obtusus*, Lec., N. Spec., p. 107.

This is much flatter than any of the smaller species, more elongate and with the sides of the thorax more strongly rounded and narrower at base than middle.

Middle California. Length .30 inch.

*E. rugosus*, Motsch., Bull. Mosc. 1845, 1, p. 75.

Is unknown and the description unrecognisable.

From Sitkha.

#### TRIBE VI—BATULIINI.

Mentum large, concealing ligula but exposing the bases of the maxillæ, and with a broad gular peduncle. Middle coxæ entirely enclosed by sterna, trochantin invisible. Intercoxal process of abdomen triangular. Legs short, tibial spurs distinct. Tarsi short, spinose beneath.

I have removed *Anepsius* from the tribe, as it has the middle coxæ open externally and the trochantin visible. It will be found in the next sub-family. The single genus *Batulius* constitutes this tribe, containing but two species.

#### BATULIUS, *Lec.*

*Batulius*, Lec., Ann. Lyc. V. 148.

*B. setosus*, Lec., Ann. Lyc. 5, 148.

Length .14 inch.

Occurs in the Deserts of the Gila.

*B. rotundicollis*, Lec., Ann. Lyc. 5, 148.

These are both small testaceous insects. The former is the larger, more robust and sparsely covered with yellowish hairs. The sides of the thorax are broadly rounded and the disc more convex. In *rotundicollis* the thorax is shorter, somewhat narrower behind, and less strongly rounded on the sides.

Length .10 inch.

Occurs with the preceding.



## TRIBE VII—ZOPHERINI.

Mentum large, barely concealing ligula and maxillæ, inserted on a broad short gular process. Middle coxæ entirely enclosed by sterna, without trochantin. Anterior coxæ widely separated. Tibial spurs very minute. Eyes very finely granulate. Body elongate, apterous and covered with asperities.

Four genera are comprised in this tribe:—

Tarsi sulcate; ligula concealed.

Antennæ received in deep grooves.

Joints 9–11, connate, truncate at tip.

ZOPHERUS.

“ 10–11, “ , pointed “ “

PHLÆODES.

Antennal cavities obsolete behind, antennæ as in Phlæodes.

NOSERUS.

Tarsi not sulcate; eyes prominent, antennæ not received in grooves.

Antennæ with joint 10 broader than 9 and 11, and free.

PHELLOPSIS.

ZOPHERUS, *De Cast.*

Zopherus, Cast., Hist. Nat. Ins., Col. II, p. 205.

The Zopheri are much more convex than the species of the other genera of this subfamily, and present well defined specific differences among themselves.

Six species are known to inhabit our Territories—

Elytra quadrituberculate at apex.

*nodulosus*.

Elytra bituberculate at apex.

Body above with narrow white marginal band from anterior angle of thorax to apex of elytra.

*elegans*.

Body above entirely black.

Elytra with smooth elevated tubercles.

Tubercles round, very convex, approximate and shining. *concolor*.

Tubercles round, flattened, distant and subopaque. *guttulatus*.

Tubercles elongate, flattened, moderately shining. *tristis*.

Elytra finely granulate, opaque. *opacus*.

Elytra finely punctured, moderately shining. *gracilis*.

*Z. nodulosus*, Sol.,\* Ann. Ent. Soc. France V—42. Texas.

\* Since this paper has been placed in the hands of the Society for publication, I have been informed by letter from M. A. Sallé, of Paris, that our common Texan species quoted in all American authors as *Z. nodulosus*, Sol., is not that species, and should receive another name. In a monograph of all the species of *Zopherus*, prepared but still unpublished, Sallé proposes to call it *Haldemani*. A true specimen of *nodulosus*, Sol., is now before me, having been sent me by Sallé, to whom the type was accessible. *Nodulosus* is more elongate, less robust and rather less convex. The black spots of the thorax are more numerous and cover a larger space without becoming confluent into a large patch, as in *haldemani*. The black spots of the sutural row are small, elongate oval, distant and not confluent

This very beautiful little species may be readily known by the characters above given. The narrow white margin of the elytra is equal to about a third of the width of each elytron. The rounded elevated black tubercles contained in this white space are much more distinct than on any other portion of the elytral surface. Toward the suture they become more flattened, their arrangement more confused and their boundaries very poorly defined, so that they appear to range from one unto the other.

A single specimen collected by D. Palmer, in the Canon de Chelly, New Mexico, and kindly placed at my disposal, through the Agricultural Bureau at Washington.

Occurs in eastern New Mexico, at the base of Rocky Mts.

*Z. concolor*, Lec., Ann. Lye. V. 130.

*Z. guttulatus*, Horn, Trans. Ent. Soc. 1867-160.

Southwestern Texas. Coll. Am. Ent. Soc.

*Z. tristis*, Lec., Ann. Lye. V. 130. Colorado and Gila Deserts.

Not rare at Fort Grant, Arizona, under loose bark of mesquit.

*Z. opacus*, Horn, Trans. Ent. Soc. 1867-161.

Specimens from Nevada, in my cabinet and that of H. Ulke.

*Z. gracilis*, Horn, Trans. Ent. Soc. 1867-161.

Unique specimen from Fort Whipple, Arizona, in cabinet of Dr. Leconte.

A monograph of our species may be found in Trans. Ent. Soc. of Philadelphia, 1867, pp. 159 *et seq.*

#### PHLEODES, *Lec.*

Phleodes, Lec., Class. Col. N. A. p. 216.

Ageonoma, Pascoe, Journ. Ent. II, p. 487.

Two species from California belong here. Both are moderately elongate, depressed insects, with surface very coarsely sculptured.

into a long black stripe, as in *haldemani*. In the former species the elytra have the black spots between the suture and sides much larger and more numerous, while the similar region not only of the elytra but also of thorax in *haldemani*, is in major part white. The white patches of the under surface are larger in *nodulosus* and occur on each side of the head, prosternum, meso and metasternum, and first, second and third abdominal segments. In all cabinets the name *Z. haldemani*, Sallé, should be substituted for that of *Z. nodulosus*, ‡ Hald.

*Z. elegans*, similar in form to *tristis* or *concolor*, but rather more slender; black, subopaque; thorax longer than broad, broader in front, sides moderately rounded and gradually narrowing to base, surface moderately convex, with sparsely placed distinctly muricate punctures, each bearing a scale-like hair; margins with a narrow white space, in which are included moderately elevated, smooth round black tubercles. Elytra elongate oval, narrower than the thorax, moderately convex and with nine rows of tubercles more confused and less distinct at the suture, and becoming more rounded, distinct and distant toward the sides, where there is a narrow band of white containing three of the rows of tubercles. Body beneath black and opaque, very sparsely punctured, each puncture with a scale.

Length .60 inch.

*P. diabolicus*, (Nosoderma) Ann. Lye. 5-130, and Pacif. R. R. Reports and Surveys IX, Append. 1, pl. 1, fig. 2.  
From California. Abundant at San Jose. Length .6-.8 inch.

*T. pustulosus*, Lec., Class. Col. N. A. 216, (Nosoderma); Proc. Acad. 1859-77.

Differs from the preceding in the much finer granulation of the surface, and by the total absence of the white patches at the humeri and apices of elytra. Both species occur under dead oak bark, *pustulosus* being very abundant at Tejon.

Length .60-.85 inch.

#### NOSERUS, *Lec.*

Noserus, Lec., Class. Coll. N. Am. 216.

*N. plicatus*, Lec., loc. cit. (Nosoderma) Lec., Proc. Acad. 1859-77.

Not rare at Fort Tejon, under oak bark.

Length .55-.72 inch.

#### PHELLOPSIS, *Lec.*

Phellopsis, Lec., Class. Coll. N. Am. 216.

*P. porcata*, Lec., loc. cit. (Nosoderma) Lec., Proc. Acad. 6-235.

Occurs abundantly in Oregon.

Length .55-.62 inch.

*P. obcordata*, Lec., Class. Coll. N. Am. 216; (Boletophagus) Kirby, N. Z. 236. Eastern and Middle States and Canada.

These two species are closely allied and not easy to describe as distinct. *Porcata* is, however, dark brown, while *obcordata* is ferruginous brown. Both species may be described as having the following elytral sculpture: 1st. A sutural elevated ridge. 2d. A ridge extending from the base of elytra more or less continuous, terminating in a tubercle. 3d. A short ridge. These are separated from each other by a row of deep perforations. In *porcata* the second ridge is continuous and the third not very prominent; in *obcordata*, the second ridge is interrupted at its lower half, and consequently not reaching the tubercle, and the third very prominent. Similar in length to the preceding.

#### TRIBE VIII—USECHINI.

Mentum moderately large, broadly rounded in front and barely concealing the ligula. Middle coxæ enclosed by sterna, trochantin not visible. Coxæ widely separated. Tarsi not sulcate beneath. Antennæ eleven jointed; joints free, last rounded and larger than preceding. Antennal groove marginal, visible from above. Eyes rounded, coarsely granulated.

#### USECHUS, *Motsch.*

Usechus, Motsch., Bull. Mosc. 1845-1, p. 79.

*U. lacerta*, Motsch., loc. cit. *Rhagodera tuberculata*, Motsch., (nec Mannerheim) Etudes Entom. Ann. V. p. 22.

Found near Santa Cruz, Cal. Length .20 inch.

For a fuller account of this insect see Proc. Ent. Soc. 1867-293.



## TRIBE IX—STENOSIINI.

Mentum large, inserted on a gular peduncle, maxillæ exposed, ligula partly visible. Trochantin not visible. Coxæ moderately separated. Legs feeble, tibial spurs obsolete. Tarsi ciliate. Antennæ eleven jointed. Elytra feebly embracing body. Head strongly constricted behind. Eyes divided (in our species), coarsely granulated.

One genus in our territory belongs to this tribe.

ARÆOSCHIZUS, *Lec.*

*Aræoschizus*, *Lec.*, *Ann. Lye.* V. 138.

It is incorrect that the eyes have been said to be entire. They are divided by the side of the head, the larger portion being enclosed between the margin and another longitudinal elevation, while a smaller portion, sometimes of only three or four lenses (in *costipennis*), is visible beneath. Attention was directed to this by the discovery of a second species in which one-third of the eye is below the margin of the head.

*A. costipennis*, *Lec.*, *Ann. Lye.* V. 138; *Lac. Genera*, Pl. 49, fig. 4; Thomson, *Arcana*, Pl. XIII, fig. 11.

Occurs from Vallecito, Cal., to near Fort Cummings, New Mexico.

Figured by Lacordaire, *Gen. des Coleop.*, pl. 49, fig. 4 (poor figure).

*A. sulcicollis*, light brown, head elongate oval, gradually narrowing behind the eyes, coarsely punctured, each puncture bearing a yellowish scale-like hair, epistoma smoother; thorax longer than broad, smaller and narrower than head, disc coarsely punctured and with yellowish scale-like hairs; slightly channelled longitudinally and with two obtuse elevated ridges bounding the groove; thorax narrower behind, sides anteriorly strongly rounded, posteriorly sinuate with distinct angles, apex and base truncate; elytra elongate oval, humeral angles not distinct, with four acute costæ on each elytron, interstices flat, with a double row of very coarse punctures; body beneath rather finely punctured and with sparsely placed yellowish scales. Legs with yellowish scale-like hairs. Length .16 inch.

Collected in Owens' Valley, California, under stones in very dry places, and very frequently, though probably merely accidentally, with ants. Very abundant during Spring and Summer.

Differs from all our other species by the very narrow thorax. Anteriorly the sides are broadly rounded, posteriorly becoming sinuate and narrowing so that the base is one-half smaller than the broadest part of the thorax. The elytra are elongate oval as in *costipennis*, the costæ have a row of recumbent scale-like hairs, the interstices are usually flat, though at times faintly carinate. The elytral costæ are four in number (including the sutural), the first and second do not extend to the tip and are unequal in length, the first being longer, the third extends from within the humeri to the apex, the fourth is marginal and unites with the third near the apex.

*A. regularis*, dark brown, head rotundate-oval, broadly rounded behind the eyes; thorax longer than broad, scarcely narrower or smaller than the head, disc feebly channelled, anteriorly and posteriorly truncate, sides anteriorly rounded, gradually narrowing posteriorly. Elytra elongate oval, costate, interspaces flat with a double row of very coarse punctures. Length .18 inch.

Fort Grant, Arizona, under stones, not common. In sculpture and the arrangement of the scale-like hairs this species resembles the last, but differs in color and form of head and thorax.

*A. armatus*, dark brown, head oval, rounded and narrowing behind the eyes, and suddenly narrowing to form the neck, with its hind angles moderately distinct; thorax subquadrate, feebly channelled, sides feebly rounded anteriorly and slightly narrowing behind. Elytra oval, costæ less distinct, interstices slightly carinated and with two rows of coarse punctures. Anterior femora armed at middle with a small acute tooth, middle femora with a tubercle, posterior femora mutic. Length .16 inch.

One specimen, Owens' Valley, collected during October, 1862.

As in the preceding species, the head, thorax, edges of costæ, under surface of body and legs are sparsely covered with the yellowish scale-like hairs.

The species of this genus seem to be becoming numerous. Doubtless others remain in the unexplored desert regions of the West, to reward any one who has sufficient patience to find stones under which they can find lodgment, and endurance to withstand the heat that has been as high as 125° Fahr. in as protected a place as possible, and during the season too, when Tenebrionidæ are most abundant.

To facilitate the recognition of these species, I add the following table:

Femora mutic, unarmed.

Thorax not channelled on disc.

*costipennis*.

Thorax with disc grooved.

Head elongate oval, thorax much narrower behind.

*sulcicollis*.

Head rotundate-oval, thorax feebly narrowed.

*regularis*.

Femora (anterior and middle) armed with a small acute tooth or tubercle at middle.

*armatus*.

*Costipennis*, Lec., differs besides by having the hairs on the surface of the body darker in color, and on the edges of the costæ almost erect. The thorax regularly convex and all the angles more distinct. The species are all nearly uniform in size, varying only from .15-.18 inch.

#### TRIBE X—DACODERINI.

Mentum large lunate, concealing base of maxillæ, ligula exposed. Middle coxæ enclosed by sterna, anterior coxæ contiguous. Antennæ ten-jointed, eyes oval, coarsely granulated. Head suddenly constricted behind. Tibial spurs very small, tarsi pubescent.

#### DACODERUS, *Lec.*

*Dacoderus*, Lec., Proc. Acad. 1858, 74.

*D. striaticeps*, Lec., Proc. Acad. 1858-74; Thomson, Arcana, 1, pl. XII, fig. 6.

A single genus and species constitutes this tribe, remarkable for the contiguity of the

anterior coxæ. The head is suddenly constricted behind the eyes, partly forming the angle. The eyes are oval, longitudinal and bounded beneath by the margin of the head. The thorax is strongly constricted at its middle, with a tubercle on each side bridging the constriction and uniting above the parts before and behind it. The elytra are elongate oval, flattened above, emarginate at base, with the angles very distinct; epipleuræ narrow.

Length .18-.20 inch.

This insect, recalling remarkably the Rhyssodes, is found over a large extent of country, and is probably not rare, specimens being found from Vallecito, Cal., to Fort Grant, Arizona. It usually occurs in small colonies of three or four, under stones in very dry places, and when captured feigns death so persistently that I have never seen one walking.

There remains but one insect described in this sub-family whose position has been unaccounted for, *Dysmathes Sahlbergii*, Mann. From the measurements and characters assigned to this insect, I am inclined to believe it identical with the *Amphizoa insolens*, Lec., and so stated some months since in a verbal communication to the American Ent. Society.

#### Sub-Family II.—ASIDIDÆ.

The essential character of this sub-family is,—the middle coxæ are not entirely enclosed by the sterna, but are open externally and completed by the parapleuræ. The trochantin is here always more or less visible. The tarsi are for the most part spinose, in but one genus silky pubescent (*Nyctoporis*).

This sub-family consists in our fauna of six tribes, which may be arranged in the following order:

Labrum scarcely visible;

Anterior tibiæ broadly dilated.

ANEPSIINI.

Anterior tibiæ slender.

Tarsi pubescent, spurs minute, genæ prominent,

NYCTOPORINI.

Tarsi setose, spurs large, genæ not prominent.

CRYPTOGLOSSINI.

Labrum prominent, in great part visible;

Intercoxal process of abdomen broad, truncate;

Mentum large, ligula scarcely visible.

ASIDINI.

Mentum small, ligula lunate exposed.

BRANCHINI.

Intercoxal process acute, triangular.

CONIONTINI.

#### TRIBE XI—ANEPSIINI.

Mentum moderate, supported by a short broad gular peduncle, ligula concealed, maxillæ visible. Epistoma rounded in front, labrum entirely concealed. Middle coxæ open



externally. Anterior tibiæ broadly dilated with stout spurs, tarsi with spinose hairs beneath. Antennæ slightly thicker externally.

ANEPSIUS, *Lec.*

*Anepsius*, Lec., Ann. Lyc. V. p. 147.

*A. delicatulus*, Lec., Ann. Lyc. 5, 147-148.

A small (.17 inch) insect, with brownish head and thorax and black elytra. The thorax and head are confluent punctured, the elytra punctured in striæ. The eyes are almost entirely divided. The under surface and legs are ferruginous. Occurs at Vallecito (Leconte), and in Owens' Valley, where many specimens were found under stones.

TRIBE XII—NYCTOPORINI.

Mentum moderate, supported by a short broad gular peduncle, ligula hardly visible, base of maxillæ exposed, genæ very prominent. Anterior tibiæ slender, spurs small on all the legs, tarsi silky pubescent beneath.

NYCTOPORIS, *Esch.*

*Nyctoporis*, Esch., Zool. Atl. IV, p. 11.

This genus, only one of the tribe, is remarkable for the vestiture of its tarsi. Its species appear to be confined exclusively to maritime California, and to the region of the Coast Range.

Our species are four in number, as follows:

Head strongly carinate.

Thorax with two deep foveæ.

*cristata*.

*galeata*.

Thorax not foveate,

*carinata*.

Head not carinate; thorax not foveate.

*æquicollis*.

*N. cristata*, Esch., Atlas Heft. IV, p. 11, a very rare species. Length .50 inch.

*N. galeata*, Lec., Pacif. R. R. Rep. IX, Append. I, p. 49, pl. 2, fig. 1.

This species is closely allied to the preceding, and it is very doubtful whether they are distinct. A typical specimen of *cristata* is in the collection of Dr. Leconte, and we are thus enabled to make perfect comparisons. In both species the elytra are ornamented with acute ridges interrupted, forming rather a series of short elevations or catenulations. The only essential difference between the two species appears to be in these ridges. In *cristata* they are rather longer, less acute on top and higher than in *galeata*. The two forms thus appear to differ strikingly at first sight, but an analysis shows but little of specific value, and it is highly probable that other forms from the northern portion of California will unite the two. Found abundantly near San Francisco.

Length .50 inch.

*N. carinata*, Lec., Ann. Lyc. 5-138.

Differs from the two preceding in the absence of thoracic foveæ and in the elytral sculpture. In this species the elytral costæ are alternately continuous and interrupted, the former being higher and crenulate, the latter merely rows of small elevations between the higher costæ.

Not rare in Southern California (Tejon, San Pedro and San Diego).

Length .50-.62 inch.

*N. æquicollis*, Esch., loc. cit.

The head is not cristate, the thorax not foveate, and the elytra ornamented with rows of elongated tubercles less prominent than in any of the preceding species. Not rare at San Francisco and Tejon.

Length .50 inch.

#### TRIBE XIII—CRYPTOGLOSSINI.

Labrum almost entirely concealed. Eyes reniform, not coarsely granulated. Mentum moderately large, supported by a broad gular peduncle, exposing maxillæ and concealing ligula. Elytra with narrow epipleuræ and moderately embracing the body. Body apterous. Tibiæ with moderately long, slender spurs. Tarsi spinous beneath.

The genera of this tribe are two in number, and differ as follows:

Last joint of antennæ oval, acute, scarcely smaller than preceding joint;

antennæ scarcely flattened.

CENTRIOPTERA.

Last joint of antennæ truncate, much smaller than preceding joint;

antennæ strongly flattened.

CRYPTOGLOSSA.

I have found it necessary, owing to the discovery of new species, to annex the genus *Oochila*, Lec., to *Centrioptera*, the form of mesosternum being a character of scarcely any value in this genus, and the denticulation of the hind thighs of still less; specimens undoubtedly *C. spiculifera*, are in my cabinet, with almost entirely smooth thighs, while specimens of *Oochila* have thighs with rather coarse granules. The degree of rugosity or spiculation of the elytra at its sides, appears to determine the presence or absence of the femoral denticulations, and is consequently not even of specific value.

#### CENTRIOPTERA, *Mann*.

Mann. Bull. Mosc. 1843, p. 249. *Oochila*, Lec., Class. Col. N. A., p. 220. *Asbolus* (part) Lec.

For convenience in recognising our species I add the following table:

Elytra with series of more or less evident tubercles becoming spiculate at the sides near apex. Hind thighs within more or less denticulate or granulate.

Prosternum produced behind the coxæ.

Head and thorax smooth.

Mesosternum slightly declivous.

Mentum very coarsely punctured, convex at middle. *spiculifera*.

Mentum nearly smooth, with a longitudinal median

ridge.

*muricata*.

Mesosternum and metasternum exactly on same plane. *asperata*.

Head and thorax very coarsely punctured. *variolosa*.

Prosternum not produced, truncate; elytra scarcely spiculiferous. *seriata*.

Elytra striato-punctate, not at all spiculiferous, prosternum produced,

hind thighs distinctly granulate within. (*Thorax broader than*

*long.*)

*infausta*.

*C. spiculifera*, Lec., Proc. Acad. 1861-337.

Our largest species, distinguished from *muricata* by the greater development of the spiculæ at the sides of the elytra near the apex, and by the difference in sculpture of mentum. The mentum is very coarsely and even confluent punctured, and broadly convex along the median line, bounded on each side by an oblique shallow groove. This sculpture of mentum seems to distinguish from the succeeding species, individuals as small and as smooth as that species usually presents.

I believe this species to be identical with that of Mannerheim (*caraboides*), but cannot settle the question definitely without a type of that species or some fuller description.

Not rare on the peninsula of Lower California.

Length 1.08 inch.

*C. muricata*, Lec., Ann. Lyc. 5-142.

Resembles the preceding, but is smaller and with much less developed spiculæ. The mentum is smooth and with but few very distant large punctures, and with a longitudinal, more or less acute, median ridge.

Occurs not very commonly on the Deserts of the Colorado and Gila rivers. One specimen from Lower California.

Length .55-.95 inch.

*C. asperata*, black, moderately shining, elongate; head coarsely but not densely punctured. Thorax longer than broad, emarginate anteriorly, truncate posteriorly, sides broadly rounded, slightly narrowed behind, angles sub-acute, disc moderately convex, smooth and a few coarse punctures near the sides; elytra elongate oval, flattened on the disc, very declivous posteriorly, base truncate, humeral angles not prominent, ornamented with series of elevated tubercles, more or less acute on the disc, becoming more acute but scarcely separate posteriorly. Mentum evenly convex, very coarsely punctured. Hind thighs with a few coarse granules. Prosternum produced, broadly rounded at tip. Mesosternum flat beneath, vertical and emarginate in front.

Length .70 inch.

Collected by Mr. Wm. M. Gabb, on the peninsula of Lower California, but one specimen obtained.



This species and the succeeding bear a remarkable resemblance to the figure of *Cryptoglossa bicostata*, Ann. Soc. Entom. V., pl. 24, fig. 13, less the two costæ of that species.

*C. variolosa*, black, sub-opaque. Head very coarsely and in front densely punctured. Thorax as broad as long, emarginate in front, truncate behind, sides broadly rounded, slightly narrowed behind, angles rectangular, disc feebly convex, very coarsely punctured, becoming more dense at the sides and base. Elytra elongate oval, truncate at base, moderately convex above, declivous behind, surface with regular series of elevated smooth tubercles, becoming rather more acute posteriorly, but not spiculate. Hind femora feebly granulate and coarsely punctured within. Mentum convex at middle with an oblique groove each side, and very coarsely and confluent punctured. Pro- and mesosternum as in the preceding species. Length .80 inch.

Rather common at Fort Grant, Arizona. Numerous specimens were collected by myself during the Winter of 1865.

*C. seriata*, Lec., (*Cryptoglossa*) Proc. Acad. 1861, 337. *Oochila seriata*, Lec., List. Col. N. Am. Smithsonian Collec. 140, p. 59.

Differs from our other species by the truncate prosternum and the nearly smooth femora. Mentum coarsely but not densely punctured. It cannot be separated from *Centrioptera*, and is but one link of the chain that will at no very distant day unite this genus with *Cryptoglossa*.

Not rare in Lower California. Collected abundantly by Mr. Wm. M. Gabb.

Length .75-.86 inch.

*C. infausta*, Lec., (*Asbolus*) Proc. Acad. VII, 64. *Oochila infausta*, Lec., List. p. 59.

The most robust and least convex of the species of the genus, resembling strongly our species of *Cryptoglossa*, particularly *lævis*, Lec. The elytra are not tuberculate, the hind femora are very coarsely granulate within, the prosternum produced. The mentum is coarsely and sparsely punctured, with a slight depression in front.

A single specimen from Texas. Length .80 inch.

*C. caraboides*, Mann., Bull. Mosc. 1843-280, figured in Guérin Menev. Magaz. d. Zool. Ins. 1843, pl. 126.

This species is unknown to us. It is very probable that *spiculifera*, Lec., is identical with it.

#### CRYPTOGLOSSA, Sol.

*Cryptoglossa*, Sol., Ann. Soc. Entom. V., 680.

*C. verrucosa*, Lec., (*Asbolus*) Ann. Lye. 5-129; Lac. (Crypt.) Gen. Col. V., 138.

Opaque, elytra with series of elevated tubercles.

Abundant along the Gila, under dead Yucca.

Length .65-.90 inch.

*C. lævis*, Lec., (*Asbolus*) loc. cit.; Lac. (Crypt.) loc. cit.

Smooth, shining. Elytra entirely smooth. Not rare at Fort Yuma, Cal., under logs and stones.

Length .65-.70 inch.

At no very distant day this genus and the preceding will have to be united. The only character separating them having proven to be of trifling value among the Asidini. *Centrioptera infausta* has already afforded a link uniting the forms of the species of both genera

TRIBE XIV—ASIDINI.

Mentum large, more or less completely hiding the parts above it, supported or not by a gular process. Epistoma short, mandibles and labrum exposed. Last joint of maxillary palpi triangular and securiform. Antennæ eleven-jointed, with the last joint smaller than the preceding. Middle coxæ usually with distinct trochantin. Intercoxal process of abdomen obtuse, not triangular. Legs moderate, tarsi setose but not sulcate beneath.

The genera of our fauna may be considered as representing two distinct sub-tribes, as follows:

Middle coxæ not enclosed by the sterna, angulate externally, and with a very distinct trochantin. ASIDI.

Middle coxæ closed by the sterna, rounded, trochantin very small or wanting. ASTROTI.

A third sub-tribe is noticed by Lacordaire, containing the genus *Machla*, differing abundantly from either of the above tribes in the presence of grooves on the under surface of the thorax for the reception of the antennæ.

SUB-TRIBE I—ASIDI.

Two genera constitute this tribe in our fauna:

Inflexed portion of elytra narrow, composed entirely of epipleura. MICROSCHATIA.

Inflexed portion of elytra wide; epipleuræ very narrow and indistinct. ASIDA.

In *Asida* the epipleuræ are generally very indistinctly defined, while in *Microschatia* the suture is indicated by a well defined ridge forming the elytral margin.

MICROSCHATIA, *Sol.*

*Microschatia*, Sol., Ann. Soc. Ent. V., 774.

Three species compose this genus and are defined as follows:

Thorax narrower at base than at middle, and with median basal impression; elytra oval.

Elytra with series of coarse punctures, thorax smooth. punctata.

Elytra rugose, thorax coarsely and confluent punctured. inæqualis.

Thorax as broad at base as at middle, sides of elytra parallel in front, humeral angles distinct.

Elytra sulcate, thorax smooth. sulcipennis.

*M. punctata*, Sol., Ann. Soc. Entom. V., p. 475; pl. 11, fig. 22.

For several specimens of this species I must acknowledge my indebtedness to Mr. Wm. M. Gabb, by whom they were collected on the peninsula of Lower California.

Length .62-.82 inch.

*M. inæqualis*, Lec., Ann. Lyc. V., p. 129. Lacord. Gen., pl. 51, fig. 5. *Puncticollis*, Lec., (loc. cit.)

I unite the two species of Dr. Leconte, there being no characters on which to separate them. The latter form is, however, smoother, the rugosities of the elytra less defined, a character of but little value, as may be seen by examining other genera of the family (*Phloeodes* and *Centrioptera*), where age and locality cause the same species to vary greatly in this respect. *M. inæqualis* is not rare at San Diego, and occurs at Tejon and various places along the coast range. *Puncticollis* is from Warner's ranche, near the borders of the Colorado desert.

Length .60-.65 inch.

*M. sulcipennis*, Lec., Journ. Acad., Series II, vol. IV, p. 18.

Differs notably from the preceding species, and might with great propriety, according to the hitherto received rules, form a new genus. I prefer, however, to retain it in the genus in which it was placed by its author. The hind angles of the elytra are acute and overlap the rectangular humeral angles of the elytra. Its form is consequently near that of *Asida opaca*. From Llano Estacado, Texas.

Length .60 inch.

#### ASIDA, Latr.

*Asida*, Latreille, Hist. Nat. Crust. et Ins. X., p. 269.

*Pelecyphorus*, Sol., Ann. Soc. Entom. V., p. 467.

*Euschides*, Lec., Ann. Lyc. V., p. 127.

*Philolithus*, Lac., Genera des Coleop. V., 157.

Under the older name of Latreille, it is proposed to assemble all the species of *Asidini* in which the trochantin of the middle coxæ is plainly visible, the antennæ not received in thoracic grooves, and eleven-jointed.

After a very careful study of our own and all the foreign species accessible to me, the differences between the genera as given by Lacordaire and Solier, have vanished completely, so that while we have among typical *Asidæ* a very distinct prolongation of the external apical angle of the anterior tibiæ, and among the species referred to *Philolithus* a total want of such prolongation, numerous intermediate forms occur in our fauna to which it would be difficult to assign a place in either genus. Instead, therefore, of erecting these into genera as numerous as the species, (as has been too often done already) the more conservative plan of uniting all with one genus has been pursued. The presence or absence of prominent hind thoracic angles has also had undue importance assigned to it.



The genus *Asida* must, according to the view here adopted, be considered as one of those polymorphous genera, many of which are already known in the family, with species differing among themselves in characters of vastly less moment than those found among our species of *Eleodes*, as will be seen hereafter.

*A. opaca*, Say, Journ. Acad. III, 254. (*Euschides*) Lec., Ann. Lye. V., 127; Smithson. Contrib. 4to, 1859, Pl. 1, fig. 9.

Abundant along the eastern base of Rocky Mts.

Oval, opaque, humeral angles of elytra prominent, hind angles of thorax acute. Elytra with very indistinct, irregularly confluent elevations.

Length .50-.68 inch.

*A. lirata*, (Lec.) Proc. Acad. 7, 223. (*Asida*) Lec., List Col. N. A. Arizona.

Same form as *opaca*. Each elytron with 6 longitudinal costæ on the disc, one sutural, and each with a marginal ridge.

Length .60 inch.

*A. polita*, Say, Journ. Acad. III, 255.

Found with *opaca*. Form as in *opaca*, hind angles of thorax rectangular. Elytra smooth, shining. Length .60 inch.

*A. sordida*, (Pelecyp.) Lec., Proc. Acad. 6-446. Smithson. Contrib. 4to, 1859, pl. 1, fig. 11.

The figure cited represents rather a robust form of the species. The hind angles of the thorax are acute and prominent, the disc very coarsely punctured. The elytra have a marginal acute ridge, and two on each elytron becoming confluent a short distance from the apex, the interstices being transversely wrinkled. As varieties of the species I add the following:

*P. costipennis*, Lec., Journ. Acad. 2d Ser. 4-20.

Differs from the preceding only in having the costæ of the elytra better defined and the hind angles of the thorax rather more acute.

*P. inæqualis*, Lec., Journ. Acad. 2d Ser. 4-19.

*P. æger*, Lec., " " " "

These two are smoother than the typical *sordida*. They cannot be regarded as specifically distinct. *Sordida* and its varieties are all from eastern New Mexico and the adjacent regions to the eastward.

*A. ægrota*, (Pelecyp.) Lec., Proc. Acad. 1861-337.

Thorax as long as broad, narrower behind, sides sinuate posteriorly, base emarginate, angles acute, prominent. Elytra similar in form to *sordida*, but more attenuate at apex, and more suddenly declivous, sides margined, disc with but one costa on each elytron, extending from near middle of base to two-thirds length of elytron and ending in an acute spine. The interstices between are as in *sordida*. Abundant in Lower California.

Length .90 inch.

*A. morbillosa*, (Pelecyp.) Lec., Proc. Acad. 1858, p. 74.

*Philolithus* id., Lac. Genres. Vol. V., p. 725.

Resembles the preceding. The humeri of the elytra are toothed. The thorax is truncate behind with rectangular angles. The elytra are sculptured as in the preceding. The costa does not, however, end in a spine. Some specimens from Lower California differ from this type in the form of the thorax, being less convex along the middle and more nearly resembling the outline of *agrotæ*. The humeral angles are dentiform as in *morbillosa*. I do not feel warranted in describing it as distinct, but think it points to a union of *agrotæ* and *morbillosa*, and when the desert regions of the California peninsula shall have been more thoroughly explored, intermediate forms will doubtless be found.

Length .75 inch.

*A. actinosa*, black opaque, head opaque, finely granulate; thorax quadrate, broader than long, sides moderately rounded, margin finely crenulate, anteriorly emarginate, angles acute, posteriorly nearly truncate, angles rectangular, above coarsely punctured along the margin, finely granulate on the disc. Elytra rounded, oval, very convex above, opaque finely and sparsely granulate, humeri denticulate, sides margined, disc with one costa near the middle of each elytron, concave externally and extending two-thirds the length of elytra, frequently with another obsolete costa within and between it and the suture. Beneath opaque finely punctured. Length .58-.92 inch.

From Owens' Valley, California. Collected by myself and Dr. Cronkhite.

This species, like all the others of the genus, is variable. In females or those much inflated, the denticulation of the humeri of elytra is lost. Others collected at Fort Tejon, have perfectly smooth and shining elytra, though preserving the characteristic costæ and losing the opacity as well as the granules of the elytra. Those collected by myself in Owens' Valley were found in the Winter months, while the weather was very cold. Those of Tejon are Summer specimens, and the weather excessively warm. Until recently, I have considered both varieties as distinct species.

*A. semilævis*, black opaque, elongate oval. Head coarsely and sparsely punctured. Thorax sub-quadrate, moderately convex, coarsely, sparsely and unevenly punctured, sides moderately rounded, posteriorly feebly sinuate, anteriorly emarginate, angles not prominent, base truncate, angles rectangular. Elytra elongate oval, convex, with a distinct marginal costa, base truncate, angles distinct, disc with six parallel moderately elevated costæ, surface between suture and first costa shining, between first costa and margin opaque. Beneath opaque, coarsely and sparsely punctured. Length .90 inch.

Collected by Mr. Wm. M. Gabb, in western Nevada. The arrangement of the costæ of this species is very peculiar. They are moderately elevated, perfectly parallel to the suture and extend three-fourths of the length of the elytra. The first costa arises from the base slightly within the angles of the thorax; the second on a line of the humeri of the elytra, but at some little distance from it; the third arises from the marginal costa at about one-fifth from the humeral angle. This species commences the divergence from the robust form resembling somewhat that of *confluens* (infra).

*A. carinata*, (Pelecyp. Lec., Ann. Lyc. 5-128; Thomson, Arcana 1, pl. XII, fig. 1.

*Philolithus carinatus*, Lac. Genres Vol. V., p. 158, pl. 51, fig. 4.

Collected by Dr. Leconte at San Felipe, Cal. The figure given by Lacordaire seems to give an idea of the form of this species.

Length .65-.80 inch.

*A. bifurca*, (Pelecyp. Lec., Proc. Acad. 1861-337.

From Cape San Lucas, Lower California. The elytra are very feebly transversely convex, and have on each a triple series of very short hairs arranged in the interspaces of series of confusedly placed punctures. Length .73 inch.

*A. connivens*, (Pelecyp. Lec., New Species, p. 140.

Closely related to the preceding species. It is doubtful whether it is really distinct, though I retain it as such until a full series shows its identity beyond doubt. Cape San Lucas. Cabinet of Mr. H. Ulke. Length .40 inch.

*A. confluens*, (Pelecyp. Lec., Ann. Lyc. 5-128. *Philolithus confluens*, Lac. Genres 5, 158.

Thorax with a distinct slightly reflexed thick margin. Marginal costa of elytra distinct, another starting from near the humerus and extending three-fourths the length of the elytra. Humeral angles distinct. Length .75-.90 inch. Colorado desert and eastward.

*A. parallela*, (Pelecyp. Lec., Ann. Lyc. 5, 128. *Philolithus parallelus*, Lac. Genres 5-158.

Similar in form to the preceding. Light brown, shining. Humeral angles of elytra rounded, marginal costa acute, nearly reaching the apex; another short costa parallel with the margin, and a short distance from it extending through the middle two-thirds of the length of the elytra. The sides of the elytra are very feebly rounded. Thorax with distinct slightly reflexed margin. Vallecito, California. Length .60 inch.

*A. sexcostata*, (Pelecyp. Lec., Proc. Acad. 1861, 337.

Similar in form to the preceding; the elytra are, however, more nearly oval and the side of thorax more strongly rounded, and with the hind angles more evident. The elytra have an acute margin and two costæ on the disc of each, of which the inner is much the longer. From Cape San Lucas.

Length .50 inch.

*A. obsoleta*, (Pelecyp. Lec., Ann. Lyc. 5-128. *Philolithus obsoletus*, Lac. Genres 5-158.

Similar in outline to *bifurca*. The thorax is, however, nearly flattened above, rather declivous in front, and with a transverse impression at base. The elytral margin is very distinct. There is a second short costa parallel with the margin and very close to it, and occupying the middle third of the length of the elytra.

Collected at Warner's ranche, California, (borders of Colorado desert).

Length .70 inch.



*A. muricatula*, (Pelecypph.) Lec., Ann. Lyc. 5-129. *Philolithus muricatus*, Lac. Genres V., 158.

Closely resembling the preceding in outline and structure of thorax, both have the margin rather acute and slightly reflexed. There is no other than the marginal costa. The elytra are covered rather sparsely with erect short yellow hairs. The legs are not hairy. Found at San Diego by Dr. Leconte, and at Los Angeles by Mr. Gabb.

Length .45 inch.

*A. hirsuta*, (Pelecypph.) Lec., Ann. Lyc. 5-127. *Philolithus hirsutus*, Lac. Genres V., 158.

Similar in outline to *parallela*. Thorax with an acute margin. Sides of elytra rounded, without marginal costa. The whole surface is clothed with erect yellowish-white pubescence. The legs are also hairy.

Found in the Colorado desert. Length .60 inch.

*A. hispidula*, (Pelecypph.) Lec., Ann. Lyc. 5-127.

*Philolithus hispidulus*, Lac. Genres V., 158.

Marginal line of elytra obtuse, elytra regularly oval, humeri rounded. Thorax broader than long, sides rounded; anteriorly emarginate with acute angles, base truncate, angles distinct, not prominent. Surface sparsely clothed with very short hairs. Color usually dark brown. Found in Colorado and Maricopa deserts.

Length .50 inch.

*A. luctata*, black, opaque, elongate oval. Head very sparsely punctured. Thorax one-third broader than long, rather widely and acutely margined, disc very feebly convex, sparsely punctured at middle, more coarsely and densely at the margin, sides strongly rounded, sub-angulate at middle, apex deeply emarginate, angles acute and prominent, base bisinuate, angles obtuse. Elytra elongate oval, without marginal costa, humeral angles rounded, surface very faintly sub-tricostate. Prosternum truncate. Length .68 inch.

I place this species near *angulatus*, from the similarity in outline, particularly of the thorax, and from the absence of any elytral marginal ridge. It is, however, very distinct from any of our species, by the characters given.

Occurs very rarely in Owens' Valley, Cal.

*A. angulata*, (Pelecypph.) Lec., Ann. Lyc. 5-127. *Philolithus angulatus*, Lac. Genres 5-158, pl. 50, fig. 3.

Found heretofore only at San Diego, Cal.

Length 1.1 inch.

*A. lecontei*, Horn, Proc. Ent. Soc. Sept. 10th, 1866, verbal remarks.

*Pelecypph. costipennis* || Lec., Proc. Acad. 1859, p. 76.

The thorax of this species is much broader than long, with the sides evenly rounded and with acute margins. The elytra are elongate oval, frequently (especially in ♂) sub-parallel and with the sides nearly vertical. Each elytron has two distinct costæ between the marginal and sutural. In some broadly oval ♀♀ there is a third costa between the marginal ridge and the first dorsal costa. The species is, however, very variable. A va-

riety occurs in Tulare Valley, Cal., at the base of the hills on which the typical form is found, in which the thorax and elytra are much more smooth and the costæ of the elytra, represented by very faint longitudinal ridges; as a variety it may be known as *A. compressa*, though, as in the rough and smooth forms of *costipennis*, I prefer to consider it merely a local variety. I have seen specimens evidently belonging to this species, much more robust and with the sculpture even more strongly marked. These are from Arizona and in the cabinet of Mr. H. Ulke.

Length .60-.90 inch.

*A. captiosa*, black, shining, similar in form to *A. lecontei*, and differing as follows:

Head very finely and sparsely punctured, thorax more convex, less margined and scarcely punctured. Elytra elongate oval, margin broadly rounded, disc entirely smooth and without trace of costæ. Length .60-.80 inch.

I have doubts whether this should be considered distinct from *Lecontei*. It appears to be merely a variety, the result of a still further continuance of that obliteration of sculpture seen in the variety of the preceding species called *compressa*. Doubtless intermediate forms will some day be discovered warranting the union of this species with *lecontei*.

Specimens in my cabinet are from both sides (East and West) of the Tulare, several hundred miles northward of Fort Tejon.

*A. puncticollis*, (Euschides) Lec., New Spec. p. 111, No. 379.

A very robust species, with elongate oval, very convex, smooth elytra, with a faint marginal ridge. The thorax is broader than long, very convex, coarsely and densely punctured, and sides strongly rounded and the margin distinct, sub-acute.

Specimens have been collected in Oregon.

Length .78 inch.

*A. consobrina*, black, opaque, very robust, head coarsely punctured, thorax one-half broader than long, feebly convex, coarsely and densely punctured, and the disc confluent punctured at the margin, sides broadly rounded, margin moderately broad; anteriorly emarginate, angles acute, posteriorly feebly rounded, angles distinct, not prominent. Elytra broadly obovate, very convex, margin scarcely evident, humeral angles distinct, not prominent, base feebly emarginate; surface faintly and obscurely rugose. Length .66 inch.

This is one of our most robust species, resembling the preceding somewhat in general appearance. As compared with *puncticollis*, it is very much shorter and more robust, the thorax less convex and punctured, and with sides more broadly rounded, and with margin much broader. The elytra are very broadly oval, convex, and suddenly declivous behind, and very obtuse at apex. The base of the thorax is broadly rounded, the rounding starting within the hind angles and not from the angles themselves.

*A. convexa*, (Euschides) Lec., Smithson. Contr. Col. Ks. & N. M., p. 14, pl. 1, fig. 10.

In this species the marginal line of the elytra is obsolete, except a very short carina at the humerus. The thorax is broader than long, moderately convex, very feebly punctured, margin distinct though narrow, side moderately and base feebly rounded. Elytra elongate

oval, broader behind the middle, moderately convex and gradually declivous behind, the base is feebly emarginate, angles not prominent. From Arizona and New Mexico.

Length .85 inch.

*A. obovata*, (Euschides) Lec., Ann. Lye. V. 127.

Differs from the preceding in having the elytra much more broadly expanded behind the middle, with acute rather prominent angles. The margin of the elytra is rounded and indistinct. It is probable that future discoveries will unite the preceding species with this one.

Length .85 inch.

*A. convexicollis*, (Euschides) Lec., Proc. Acad. 7, 224.

Differs from both the preceding species in the very narrow thoracic margin, and by the greater convexity of the thorax, as well as the less breadth, as compared with the length. The elytra are similar to those of *convexa*, and has distinct though not prominent humeral angles.

Rather common in Arizona.

*A. marginata*, (Pelecyp.) Lec., Ann. Lye. V. 128; *rimatus*, Lec., Proc. Acad. 7, 223; *Philolithus rimatus*, Lac. Genera V. 158.

One of our largest and at the same time a very variable species.

Three varieties may be more especially noticed:

*Marginata*, surface sparsely and rather finely punctured, thoracic margin less strongly punctured and crenulate. Elytra with an acute margin not extending to the apex.

*Rimata*, surface of elytra very coarsely and deeply punctured, thoracic margin very strongly punctured and crenulate, disc convex. Marginal line of elytra acute and extending usually beyond three-fourths of their length. As compared with *marginatus* this species is broader, and the elytra broader and less convex.

*Subcylindrica*, thorax as in *rimata*; elytra elongate, strongly rounded on the sides, sub-cylindrical and with a very short humeral carina; surface smooth, very finely punctured.

In all these forms the thorax is broader than long, sides strongly rounded and with a flattened margin more or less crenulate. The disc is convex. The base is broadly lobed at middle and with a broad impression opposite the scutellum.

All these forms inhabit the desert regions bordering the Gila River of Arizona.

Length 1.00–1.20 inch.

*A. gibbicollis*, black, sub-opaque. Thorax broader than long, strongly gibbous, margin broad, thickened and reflexed in front, gradually narrowing to base, apex deeply emarginate, angles acute, base rounded, and with three deep impressions, one scutellar and one on each side; elytra broadly oval, marginal carina distinct, base truncate, angles distinct. Length .85–1.00 inch.

A very distinct species, recalling the form of some of the *Microschatiæ* by the strong

impressions along the basal margin of the thorax. The median impression is rather deep and rounded on each side by an elevation. The margin of thorax is slightly turned upward, more distinctly so near the anterior angles. The base of elytra is truncate and the angles distinct, not prominent.

Collected by Mr. Gabb in the peninsula of Lower California.

*A. elata*, (Pelecyp.) Lec., Proc. Acad. 6, 445; (Philolithus) Lac. Genera V., p. 158; *Pelecyp. difformis*, Lec., Proc. Acad. 7, 723; (Philolithus) Lac., loc. cit.; Thomson, Arcana 1, pl. XII, fig. 7.

This species is remarkable in the curious form of its thorax. Sides of thorax strongly angulate and margined, margin broadest at the angulation, rapidly narrowing to the anterior angles, which are dentiform; behind the angulation the margin is very feeble and the sides are rather feebly sinuate to the hind angles; apex of thorax feebly emarginate, base nearly truncate, with angles rectangular. The margin of the thorax is in some specimens rather strongly reflexed, so that the disc becomes concave. The disc is nearly smooth, the margin very strongly and densely punctured. The elytra are elongate oval, nearly twice as long as broad, not acutely margined, feebly convex and with shallow longitudinal grooves. Along the suture the elytra are reddish brown, recalling the color seen in many *Eleodes*.

This species is distributed from Oregon to Texas.

Length 1.00–1.25 inch.

#### SUB-TRIBE II—ASTROTI.

The two genera constituting this sub-tribe have been separated from the other genera of *Asidini* on account of the form of the middle coxæ. In the species of the preceding sub-tribe, the middle coxæ are strongly angulate, externally closed by the parapleuræ and allowing the trochantin to become very distinctly visible. In these genera, on the contrary, the coxal cavities are nearly rounded, closed by the sterna, and the trochantin if at all visible is very minute. The buccal cavity is also more completely closed by the mentum, against which the sides of the gula fit accurately, not allowing the maxillæ to become visible. The ligula is completely hidden. Two genera constitute this sub-tribe, as follows:

Antennæ slender, joints longer than broad, apex of prosternum deflexed;

trochantin very small.

OLOGYPTUS.

Antennæ with joints broader than long, apex of prosternum prominent;

trochantin not visible.

ASTROTUS.

#### OLOGYPTUS, *Lac.*

*Ologlyptus*, Lacordaire, Genera V., p. 158.

*Pactostoma*, Lec., Journ. Acad. N. S. IV., p. 19.

(Without any other characters than those given in a table.)



*O. anastomosis*, Say, (*Asida*) Journ. Acad. III, 256; Lac. (*Ologlyptus*) loc. cit., pl. 52, fig. 2; Lec., (*Pactostoma*) loc. cit.

The figure given by Lacordaire, though inaccurate in many respects, will serve to give the student a tolerably exact representation of the species, and with the generic description given leaves nothing to be desired.

Not abundant. Occurs in Colorado and Kansas.

Length .50-.60 inch.

#### ASTROTUS, Lec.

*Astrotus*, Lec., Class. Col. N. A., p. 221.

Abundantly distinct from any of our *Asidini*, in the total absence of trochantin to the middle coxæ. In this genus there appear many points of structure recalling those *Molurini* allied to *Sepidium*, where we also find genera with the same structure of middle coxal cavities, and it is probable that in these genera must be sought the links uniting the now isolated *Zopherini* with the neighboring tribes.

*A. contortus*, Lec., Class. Col. N. A., p. 221; Lec., (*Microschatia*) Proc. Acad. 6, 446.

Color, dark brown, densely clothed with strongly adherent dark gray scaly coating. Head deeply inserted, lateral sutures between clypeus and front deeply impressed. Thorax broader than long, feebly convex, with two feeble longitudinal ridges separated by a median shallow groove; apex emarginate, base feebly emarginate; sides strongly angulate at middle, converging in front of and deeply sinuate behind the angulation, hind angles rectangular and covering the humeral angles of the elytra. Elytra oval, broader behind the middle, rather suddenly declivous behind, sides rather strongly rounded and with an acute and strongly serrate marginal ridge extending nearly three-fourths of their length, disc feebly convex and with an irregular elevated line on each elytron extending from within the humerus to near the apex, and the two thus enclosing an elongate oval space; several short more or less oblique ridges extend from the main ridge to the elevated sutural margin; base of elytra truncate, angles rectangular.

Length .40-.44 inch.

The entire surface of the body is sparsely clothed with scale-like hairs, and the entire vestiture and sculpture strikingly recall that of *Sepidium*.

All the specimens in our cabinets have been reported from Western Central Texas.

*A. regularis*.

Similar in form and sculpture, differing from *contortus* in the following points:

Sides of thorax not suddenly angulate at middle, but rounded and gradually sinuate to the hind angles. Median discal sulcus very faint. Elytra more broadly oval, marginal ridge moderately acute, not coarsely serrate, median costa moderately elevated, not serrate at summit, enclosing a regular elongate oval space.

This species has been for a long time considered as the female of *contortus*, but the very marked difference in the form of thorax, and the very feebly elevated elytral ridges not serrate at the summits, have caused me to place it as distinct. In all the specimens of *contortus* before me, the median costa does not extend so far forward as to touch the thoracic base, while in *regularis* this is the case.

Specimens sent from Texas by G. W. Bellrage, do not differ in size from the preceding species.

#### TRIBE XV—BRANCHINI.

Body oval, apterous. Middle coxæ with distinct trochantin. Antennæ slender, outer joints gradually broader. Mentum moderate, trapeziform emarginate in front, inserted on a gular peduncle, which is emarginate and fissured, and not covering the maxillæ. Palpi slightly dilated. Intercoxal process of abdomen triangular, rounded at tip.

#### BRANCHUS, *Lec.*

Branchus, *Lec.*, *Class. Col. N. Am.* 222.

*B. floridanus*, *Lec.*, *New Spec.*, p. 3. Florida.\*

Length .60 inch.

*B. woodi*, *Lec.*, *New Species*, p. 111, (note) Island of New Providence.

*B. obscurus*, *Horn*, *Proc. Acad.* 1866, p. 398. Nicaragua.

*Anectus vestitus*, *Horn*, *Proc. Acad.* 1866, p. 399. Honduras.

*Anectus* differs from *Branchus* in the absence of any prolongation of the external apical angle of the anterior tibiæ, and other characters derived from the antennæ and mentum.

#### TRIBE XVI—CONIONTINI.

Body elongate oval or sub-globose, apterous. Labrum very prominent. Mentum small, trapeziform, emarginate in front, ligula transverse lunate. Gular peduncle very short. Anterior coxæ sub-transverse, middle coxæ with distinct trochantin, hind coxæ narrowly separated, inter-coxal process acute. First joint of hind tarsi very long. Our genera are three in number, and may be arranged as follows:

Antennæ short.

First joint of anterior tarsi prolonged into a spine.

CÆLUS.

Antennæ long.

Anterior tibiæ with outer angle prolonged.

EUSATTUS.

Anterior tibiæ truncate at tip.

CONIONTIS.

The last two genera differ also in their form, *Eusattus* being broadly oval, *Coniontis* elongate oval, with sides more or less parallel.

\* In addition to the species above indicated, two other species are known, and also another genus with a single species.

CÆLUS, *Esch.*

Cælus, Esch., Zool. Atl. III, p. 5.

C. ciliatus, Esch., Zool. Atlas Heft. III, p. 5, pl. 14, fig. 1.

C. globosus, Lec., Ann. Lye. 5, 133.

This species differs from the preceding in being more broadly oval and more convex. The sides of the thorax are also more strongly rounded. These differences appear to be very feeble, and in a larger series may vanish. Both species are found on the sea shore of California.

EUSATTUS, *Lec.*

Eusattus, Lec., Ann. Lye. V., p. 131.

Discodemus, Lec., Class. Col. N. A., p. 223.

Conipinus, Lec., *ibid.*

The last two genera indicated by Dr. Leconte in his Class. of the Coleoptera of North America, and subsequently reunited under Eusattus (List, p. 60), cannot be retained as distinct, affording an illustration of the little value a character may have in a tribe after having been found to be of great importance in tribes not remotely separated. Instances of this kind are by no means of rare occurrence in Tenebrionidæ. In this instance the relative width of epipleuræ and elytral fold have been assumed as the points of separation, and with species so closely allied in all other important generic characters, I have deemed it more prudent to adopt the later view of Dr. Leconte, rather than establish two other genera in addition to the above-mentioned. From an inspection of the following table it will be seen that but one species is needed to complete a series uniting all the forms of epipleuræ, viz: a species between *robustus* and *reticulatus*, in which the epipleuræ shall occupy nearly the entire inflexed portion of the elytra by being gradually wider from apex to base. The presence or absence of a prominent elytral margin appears to me rather of specific than generic value. When scientific zeal shall cause northern Mexico to be more thoroughly explored, species will be found which will without any doubt fully confirm the view here adopted. With the present illustration before us, it is to be hoped that students of local faunæ will give the subject of genera due consideration. It must be borne in mind that in Tenebrionidæ a want of stability of characters is one of the most marked peculiarities of the family, and in the present paper, nearly a hundred new genera could have been described from characters for which abundant precedents could have been found.

Our species may be arranged as follows:

Elytra with a distinct, more or less acute margin.

Epipleuræ occupying entirely the inflexed portion of elytra. robustus.

Epipleuræ narrow, suddenly dilated at base.

Epipleuræ and elytral fold nearly smooth.

Elytra faintly sub-costate with interstitial reticulations. reticulatus.

Epipleuræ and elytral fold roughly sculptured.

Elytra costate, with interstitial smooth granules. *costatus*.

Elytra with coarse erosions and elevated smooth patches. *erosus*.

Elytra rounded on the sides, not margined.

Epipleuræ narrow, suddenly dilated at base, elytra smooth. *lævis*.

Epipleuræ gradually dilated at base.

Body rounded, oval. *difficilis*.

Body inflated, nearly globose.

Elytra not pubescent.

Epipleuræ distinctly defined, nearly smooth. *muricatus*.

Epipleuræ not distinctly defined, very densely punctulate. *dilatatus*.

Elytra sparsely pubescent.

Epipleuræ distinctly defined, nearly smooth. *puberulus*.

Body elongate oval.

Sub-opaque, elytra granulate. *productus*.

Shining, elytra smooth or faintly punctured. *dubius*.

*E. robustus*, Lec., N. Spec., page 112.

From the Island of San Clemente, on the coast of California.

Length .70 inch.

*E. reticulatus*, Lec., Ann. Lyc. 5-132.

*Zophosis reticulata*, Say, Journ. Acad. 3, 250.

*Discodemus reticulatus*, Lec., Class. Coll. N. A., p. 223.

Not rare in Arizona and New Mexico. This species varies considerably in sculpture and outline. The typical form is elongate oval; many, however, are in my cabinet collected by myself in Arizona, in which the form is oboval, with the elytra somewhat inflated. In the inflated specimen the thorax is much narrowed in front, being scarcely wider between the anterior angles than that between the hind angles. Specimens from western Kansas or Colorado are comparatively smooth, and the reticulations delicate; those from Arizona are sub-costate, though never coarsely punctured and granulose, as in the following species. Length .50-.62 inch.

*E. costatus*, rounded, oval, convex, black, sub-opaque, thorax being finely and sparsely punctured on the disc, densely but very faintly granulate on the sides, margin not thickened; elytra sub-costate, interstices coarsely punctured, and with smooth, small, rounded tubercles; inflexed portion of elytra densely and coarsely punctured. Length .66, breadth .40 inch.

The humeral angle of the epipleura may be easily discovered from above, being more prominent in this and the succeeding than in any other of our species.

Collected by Mr. Wm. M. Gabb on the peninsula of Lower California.



*E. crosus*, rounded oval, convex, black, moderately shining. Thorax scarcely punctured, except near the margin; margin slightly thickened; elytra with irregular shallow foveæ, interstices elevated, convex, smooth; inflexed portion of elytra coarsely punctured. Length .71, breadth .44 inch.

Our largest and one of our most distinct species, by the peculiar sculpture of the elytra. This sculpture appears to result from an irregular coarse puncturing in series, the interstices between the series and the punctures being elevated, rounded and smooth. The elytra, therefore, have a somewhat coarsely eroded appearance.

Collected by Mr. Wm. M. Gabb, with the preceding species.

*E. levis*, Lec., New Species, p. 113.

From Cape St. Lucas, Lower California. In my cabinet are specimens collected by Mr. Gabb in the same region, differing from the typical forms in the same manner that the Arizona specimens of *reticulatus* differ from those of Colorado, that is by being oboval and with the elytra more convex and inflated. With this degree of variation demonstrated by a full series of our species, I am unwilling to separate a similar variation in another as distinct, even though not possessing the intermediate forms.

Length .52-.64 inch.

*E. difficilis*, Lec., Ann. Lye. 5-132. *E. convexus*, Lec., id.

I have in my cabinet a very good series of this species, sufficient indeed to render the feeble characters separating *difficilis* and *convexus* evanescent. I have others again scarcely less smooth than *nitidipennis*, Lec., from Jalapa, Mexico. It seems probable that some further collections in regions between Arizona and Chihuahua would afford specimens warranting the union of this species also. This species is not rare from San Diego to Owens' Valley, and from Arizona to New Mexico and Colorado.

Length .35-.45 inch.

*E. muricatus*, Lec., Ann. Lye. V., 132.

From Oregon, New Mexico, and Owens' Valley, Cal.

Length .45 inch.

*E. dilatatus*, Lec., Ann. Lye. V., 132.

From the deserts of the Colorado River. I am unable to see any difference between this species and the preceding, except in the very dense fine punctulation of the epipleuræ.

Length .30 inch.

*E. puberulus*, Lec., Proc. Acad. 7, 84. Texas.

Differs from *muricatus* by the sparse scale-like hairs of the elytra.

Length .30 inch.

*E. dubius*, Lec., Ann. Lye. V., 132.

*Compinus dubius*, Lec., Class. Col. N. A., 223.

From the deserts of the Colorado and Gila.

Length .30 inch.

*E. productus*, Lec., Journ. Acad., 2d ser., 4, 20. *Conipinus productus*, Lec., Class. Col. N. A., 223.

From Arizona and Lower California. The specimens from the latter region have elytra sculptured, as in *reticulatus*.

Length .54 inch.

#### CONIONTIS, *Esch.*

*Coniontis*, Esch., Zool. Atl. III, p. 7.

Species of this genus are found rather abundantly in California and Oregon, under stones or running over the surface of the ground. Two species extend eastward and are found on the plains at the eastern base of the Rocky Mountains. There are very slight differences to be observed even between the most widely differing species, the form varying at times from true semi-cylindrical to that of conic-cylindrical, in which the thorax will be found wider than the elytra. Some species are pubescent, or rather with punctures bearing very short scale-like hairs, while others are almost entirely smooth. This character alone appears thus far to have but little value in separating species, as these hairs are lost after the insect has passed its maturity, or at least, at the end of the season. However, as specimens affording an actual illustration of this fact are not in our cabinets, I allow the species to stand as already enumerated, separating them from each other by the characters assigned.

In order to facilitate the study of them, the following table has been prepared.

Eyes reniform, entire.

Elongate oval, sides of elytra parallel, or converging toward apex.

Abdomen rugose, very coarsely and densely punctured.      *abdominalis*.

Abdomen smooth, very finely and sparsely punctured.

Elytra usually finely punctured, never coarsely punctured and rugose together, and never pubescent.

Species of robust facies, length never greater than twice the width.

Large species,      *robusta*.

Small species,      *opaca*.

Species elongate, length always notably greater than twice the width.

Large species.      *viatica*.

Small species.      *puncticollis*.

Elytra coarsely punctured or rugose, or irregular and pubescent.

Very convex species, larger.

Thoracic and elytral punctures not setigerous.      *eschscholtzii*.

Thoracic and elytral punctures with a short scale-like hair.	<i>affinis</i> .
Depressed smaller species.	
Elytral punctures with a distinct hair.	<i>subpubescens</i> .
“ “ “ short scale.	<i>nemoralis</i> .
Rounded oval, sides rounded, never parallel.	
Thorax and elytra dissimilarly punctured, elytra rugose.	<i>ovalis</i> .
Thorax and elytra similarly punctured, elytra smooth.	<i>lata</i> .
Eyes divided, species broadly oval.	<i>obesa</i> .

*C. abdominalis*, Lec., Proc. Acad. 1859, p. 77.

Not very common at Fort Tejon, Cal. May be readily known by the peculiar punctation of the abdomen. It is our largest species.

Length .66 inch.

*C. robusta*, elongate oval, convex, sides parallel; obtuse before and behind. Length .62 inch.

From Fort Tejon, southward, and one from San Francisco.

The above rather indefinite description is really all that can be said directly of this species. I have in my cabinet a long series, the sculpture and punctation varying to an extent rendering it impossible to fix even a standard. Specimen 1 is sub-opaque, thorax and elytra very densely and rather coarsely aciculate punctured, the elytra are obscurely tricostate, with the interstices obsoletely reticulate. From this point the sculpture becomes gradually less defined, and finally the species becomes as smooth and shining as any specimens of *viatica*. As compared with *viatica*, it is more robust and obtuse. The legs are also stouter and the tarsal joints less slender. Notwithstanding the rather coarse punctation of the elytra, the sculpture is very different from that seen in the next group, where the spaces between the punctures are notably elevated and rounded. The larger proportion of the specimens of *robusta* are entirely smooth. The width of the species between the humeri is equal to half the length.

*C. opaca*, elongate oval, black, sub-opaque, sides sub-parallel, head finely punctured, thorax finely and rather densely punctured, interspaces very finely alutaceous, sides rounded, gradually narrowing from the hind angles; elytra finely but less densely punctured; less frequently ferruginous brown. Length .36-.42 inch.

Not rare in Owens' Valley and at Fort Tejon, California.

Similar in form to the preceding, but much smaller. The legs and tarsi are more slender and resemble those of *viatica* and *puncticollis*. Very distinct from any of our species, though hardly separable from the preceding by description.

*C. viatica*, Esch., Zool. Atl. 3, 7, tab. 14, fig. 3.

Rather elongate in form, being at least two-and-a-half times as long as broad between the humeri. The sides of the elytra are frequently convergent toward the apex. In this

case the thorax is wider at base than the elytra. The surface is smooth and shining, thorax very finely and sparsely and the elytron rather more coarsely and very sparsely punctured. The legs are always black. The under surface of the anterior tibia is densely spinose, the spines being rather more evident than in any other species. Maritime California. Length .55-.60 inch.

*C. puncticollis*, Lec., Ann. Lyc. V., p. 131.

Similar in form to the preceding and bearing the same relation to it that *opaca* does to *robusta*. The thorax is very densely and finely punctured. The legs are brownish or ferruginous in color and rather slender, and with slender tarsi. It is about one-half or two-thirds the length of *viatica*. Specimens are not rare along the valleys of the Sacramento and San Joaquin rivers.

Length .35 inch.

*C. eschscholtzii*, Mann., Rev. Zool. 1840-188. Bull. Mosc. 1843-275. Lac. Genres, pl. 52, fig. 5 (not a good figure).

The punctures of the elytra are very large and rather dense, the interspaces convex. The punctures are not setigerous. Abundant near San Francisco.

Length .50-.55 inch.

*C. affinis*, Lec., Ann. Lyc. V., 131.

It is doubtful whether the characters separating this from the preceding are sufficient. I am unable to see any other difference than the presence of short scale-like hairs in the elytral punctures. They are, however, retained as distinct until further collections show their complete identity.

Length .50 inch.

*C. subpubescens*, Lec., Ann. Lyc. V., 131.

Differs from all our other species in being rather sparsely clothed with short recumbent hairs, giving the elytra a silken appearance. Two specimens of the species are in the cabinet of Dr. Leconte, labelled *Emmenastus rugosus*, the name having been given by Col. Motschulsky while in this city. Length .37 inch.

*C. nemoralis*, Esch., Zool. Atl. 3-7.

This and the preceding are much more depressed than any other of our species. It is also subpubescent, the hairs being very short and scale-like, and almost completely buried within the punctures. The elytra are not rugose, however, in the same manner as in *eschscholtzii*, but are irregularly corrugated and coarsely punctured. The preceding species differ from this only in having longer hairs intermixed with the short scale-like ones.

Length .40 inch.

*C. ovalis*, Lec., Ann. Lyc. V., 131.

With this commences a small series of regularly oval species. The sides are always



broadly rounded, never parallel. The thorax is smooth, very finely and sparsely punctured, the elytra are coarsely and rather densely punctured and resemble those of *escholtzii*. This species extends its range from Oregon to the plains east of the Rocky Mountains. Length .41 inch.

*C. lata*, Lec., New Species, p. 113.

Similar in form to the preceding, but more broadly oval. The thorax and elytra are densely and finely punctured. From the Island of San Clemente, coast of California.

Length .40-.46 inch.

*C. obesa*, Lec., Ann. Lye. V., 131.

Our smallest species, differing from every other in having the eyes entirely divided. I do not find the last two joints of the antennæ suddenly larger, as recorded by Lacordaire, although the antennæ are rather shorter and the joints more compact. I do not consider the division of the eyes sufficient for generic separation, more especially in a family already burdened with genera established on slight characters.

Length .25 inch.

### Sub-Family III.—TENEBRIONIDÆ.

This sub-family contains those species in which the hind margins of the third and fourth ventral segments are coriaceous. The last two segments are consequently capable of a greater degree of motion than is seen in the genera of the preceding sub-families; the middle coxæ are usually provided with a distinct trochantin, the cavities being closed externally by the mesosternal parapleuræ; in some genera the trochantin is not visible, although the cavities are never so thoroughly enclosed by the sterna as in the Tentyriidæ, and the presence or absence of this piece, although of so great value in the preceding sub-families, here loses to a great extent its significance, and genera may occur with and without trochantin in the same tribe; the body is here more frequently winged than apterous; the anterior coxæ are frequently sub-cylindrical or transverse in this sub-family and never in the preceding; genera with entire mandibles appear for the first time, and the trilobed front is never seen.

This sub-family corresponds with Cohort II. of Section II. of Lacordaire, with the addition of tribes and parts of tribes of Cohort I., as follows: Tribes XVI part, XVII, XX, XXIV part, XXV, XXVI, XXVII, and comprises a series of genera presenting almost insurmountable obstacles to the formation of higher groups. Owing to the great instability of the characters among these genera, it is extremely difficult to form a synoptic table of tribes not filled with exceptional cases. Lacordaire admits that table given by him will answer only for a small majority of the genera, and where his list is increased by

the addition of other tribes the trouble is by no means lessened. In those tribes containing large series of genera, the tendency to a rapid degradation of form is seen, analagous to the same general degradation of the entire family from the Tentyriidæ to the Otidogenæ. Thus, among the genera of the tribe Tenebrionini forms occur pointing strongly toward an affinity with Helops, and it is here among what might be termed the peripheral genera that doubt may arise as to their true position.

The separation of the sub-family into Platygenæ and Otidogenæ has not been followed, as the character seems not to deserve the importance assigned to it by Lacordaire, and Mr. Pascoe (Ann. and Mag. Nat. Hist., Ser. IV, Vol. III, p. 36,) objects to the placing of the latter section among the Tenebrionidæ, evidently not fully appreciating the fact that this sub-family as defined by Leconte has a much greater systematic value than any of the "Cohorts" of Lacordaire.

A careful revision of foreign tribes, on the basis of the sub-division of the Family into three sub-families, would result in the union of several. From the limited amount of study I have been able to give them, the Heleides appear to replace in Australia the Blaptini of Europe and America, and should probably form a sub-tribe of Blaptini, in which their peculiar form would be fully balanced by our species of Embaphion.

Many changes might be suggested, but as such discussion is altogether irrelevant to the objects of the present paper, further space will not be occupied here, although it is my desire at some future time to develop the results of study in a paper less encumbered with species.

The following table of tribes is offered for the assistance of the student, although well aware that it may often fail on the application of the test of several genera and of many species.

Front entirely corneous, anterior margin free, not articulating with a coriaceous clypeus.

First joint of tarsi elongate or moderate, never very short, tarsi not compressed; genæ not sulcate.

Eyes less prominent than the sides of front, more or less transverse, always emarginate in front.

Anterior tibiæ alone or none dilated.

Penultimate joint of tarsi entire.

Anterior coxæ rounded; middle coxæ always with distinct trochantin; antennæ never perfoliate, third joint usually larger than the following.

Hind coxæ transverse, never oblique.

Front feebly dilated at the sides.

Tarsi spinous or setose beneath.	
Elytra widely embracing abdomen.	BLAPTINI.
Elytra narrowly embracing abdomen.	SCAURINI.
Tarsi with coarse, almost spinous hairs.	AMPHIDORINI.
Tarsi finely pubescent beneath.	TENEBRIONINI.
Front broadly dilated at the sides, emarginate anteriorly.	
Anterior tarsi of ♂ dilated.	PEDININI.
Anterior tarsi of ♂ not dilated.	OPATRINI.
Hind coxæ oblique; tarsi spinous.	CRYPTICINI.
Anterior coxæ sub-transverse; middle coxæ without trochantin; third joint of antennæ always short, outer joints more or less perfoliate	
Tarsi pubescent. Last joint always long.	ULOMINI.
Penultimate joint of tarsi bilobed.	HETEROTARSINI.
Tibiæ all more or less dilated and fossorial.	TRACHYSCELINI.
Eyes more prominent than the sides of the front, usually rounded, feebly or not at all emarginate.	DIAPERINI.
First joint of tarsi very small, outer joints gradually thicker, longer and compressed. Genæ transversely sulcate.	BOLETOPHAGINI.
Front either with a broad coriaceous band or articulating directly with a coriaceous clypeus. Elytra never widely embracing abdomen. Third joint of antennæ long.	
Sides of front not obliquely elevated.	
Abdomen pedunculate; antennæ slender.	APOCRYPHINI.
Abdomen not pedunculate; antennæ with the outer joints usually compressed.	HELOPINI.
Sides of front obliquely elevated.	
Metasternum very short; body apterous.	MERACANTHINI.
Metasternum long; body slender and winged.	STRONGYLINI.

## TRIBE XVII—BLAPTINI.

This tribe contains not only a larger number of species, but also species of a greater size than any others of our fauna. Genera from every part of the globe are found here, and the species in each portion are usually among the largest of the Tenebrionidæ found there. All are black or dark brownish, and variously though never very roughly sculptured, and a few species are pubescent or pilose. All are apterous. ~~Our~~ species are

either strictly nocturnal in their habits or are found walking in sandy places either in early morning or late in the day, and during cloudy days. The larger and more cylindrical of our species will, when disturbed, place their bodies nearly vertically, the head near the ground and the tail erect, and will emit when handled a dark oleaginous offensive fluid, staining the hands brownish and remaining for a long time and apparently fixed by the action of alkaline material. In the warm regions of California the larger species attain the age of several years. Their tenacity of life is very great, as specimens have been kept pinned for two months without food or water.

Our genera are three in number.

Epipleuræ broader at base, attaining the humeri.

Mentum trilobed, lateral lobes more or less inflexed.

Mentum flat, discoidal.

Epipleuræ narrow at base, not attaining the humeri.

Mentum trilobed, lateral lobes inflexed.

ELEODES.

DISCOGENIA.

EMBAPHION.

#### ELEODES, *Esch.*

ELEODES, *Esch.*, Zool. Atl. III., p. 9.

XYSTA, *Esch.*, (ut supra.)

PROMUS, *Lec.*, Class. Col. N. A., p. 226.

Species have been described by Say as *Blaps*, by Kirby as *Pimelia*.

Mentum somewhat variable in form, usually trilobed, the middle lobe larger and more convex; lateral lobes frequently inflexed, scarcely visible. Last joint of labial palpi triangular, narrower than the maxillary, which are broadly triangular or securiform. Head not deeply inserted, suture between epistoma and front frequently distinct, epistoma truncate or feebly emarginate, sides sometimes sinuate. Eyes narrow sub-reniform. Antennæ eleven-jointed, the last three or four usually notably depressed, the last joint frequently though not always smaller than the preceding.

Prothorax variable in form, usually applied against bases of the elytra. Scutellum always distinct and equilateral. Elytra of variable form and sculpture, in many species prolonged behind. Epipleuræ always distinct, broader at base and always visible at the humeral angle, gradually narrowing toward the apex. Legs moderately long. Femora never strongly clavate, the anterior frequently armed in the male, sometimes in both sexes, with a tooth of variable form, rarely all the femora toothed. Tarsi usually channelled and setose beneath; occasionally the first two joints are dilated and spongy pubescent, or not dilated and densely covered with silken hairs.

The characters above given are those applicable to the whole genus, characters peculiar to any group will be given under its heading or in the remarks on the various species.

The genus *Eleodes* is our largest and, with the exception of *Asida*, as previously defined, the most polymorphous, and is without doubt the most difficult to sub-divide of any



in our fauna. The wide distribution of many of the species has given rise to local varieties, on which specific names have been fixed, as each new region furnished an unique specimen. Species of *Eleodes* are found distributed over a wide extent of our western territories, the Mississippi River being the extreme eastern limit. From this point not only species but individuals become more and more numerous, until on some of the arid regions of California they can be found in immense numbers. Species are found to the extreme northwest, inhabiting the rather warm belt of country westward of the Rocky Mountains and between them and the coast. Their southern limit is indefinite. In South America, *Nycterinus* replaces *Eleodes*. I must confess my inability to detect any important differences between these genera, and most authors seem to assume that any species north of the Isthmus of Panama is *Eleodes*, and south of it *Nycterinus*. It is probable that the latter genus should constitute a division of the former, equivalent in value to the groups into which I am about to sub-divide it. With *Apoerypha* and *Amphidora* on both continents, I see no reason why we should not find *Eleodes* also.

In the following synoptic table it will be found that no use whatever has been made of the form of prosternum, in the definition either of groups or species. The character is actually of no value, as specimens undistinguishable by any other characters may have a different form of prosternum, and on this and similar characters species might be indefinitely multiplied.

For convenience of study, *Eleodes* may be divided into three sub-genera:

- |  |             |
|--|-------------|
| Anterior tarsi of both sexes entirely spinous beneath.   | (ELEODES.)  |
| Anterior tarsi of males with the first two or three joints either with<br>silken hairs or spongy pubescence beneath. |             |
| Anterior tarsi of males not dilated.   | (BLAPYLIS.) |
| Anterior tarsi of males with at least the basal joint dilated.   | (PROMUS.)   |

#### ELEODES.

- |  |           |
|--|-----------|
| Spurs of anterior tibiae unequal, and dissimilar in the sexes. | GROUP I.  |
| Spurs of anterior tibiae equal, and similar in the sexes.      | GROUP II. |

#### GROUP I.

##### Section A.

Hind spur of anterior tibia broader and thicker in ♀.

Thorax convex, smooth.

Elytral margin rounded.

Elytral margin acute at humerus.

Thorax flat or concave.

Sides of elytra rounded.

Sides of elytra parallel.

*obscura*.

*acuta*.

*suturalis*.

*texana*.

##### Section B.

Anterior spur of anterior tibia broader, thicker and more strongly curved in ♀.

Elytra broad, flattened, truncate at base, angles rectangular; thorax broad at base, angles rectangular, overlapping the humeral angles of elytra. (Pediniform species).

Elytra with alternate interspaces more elevated, (each elytron sub-tricostate). tricostata.

Elytra glabrous, with regular striae of moderately large punctures, interstices equally and very feebly convex. pedinoides.

Elytra elongate oval, convex, narrower and feebly emarginate at base, angles not rectangular; thorax narrower at base, angles obtuse, not overlapping basal angles of elytra.

Anterior femora mutic in both sexes.

Elytra shining; with striae of punctures. carbonaria.

Elytra sulcate or striate, striae punctured, interstices convex, with muricate punctures. obsoleta.

Elytra diffusely punctured.

Elytra shining, punctures simple. quadricollis.

Elytra opaque, densely muricately punctured, becoming granulate. humeralis.

Anterior femora armed in the male.

Tooth very obtuse, elytral sculpture of smooth tubercles. granulata.

Tooth very acute, elytra with striae of fine punctures. extricata.

#### GROUP II.

The spurs of the anterior tibiae are similar to each other in both sexes. Occasionally the anterior spur is somewhat longer than the other; never, however, presenting anything similar to that seen in the preceding group, in which it is nearly double the size and width of the other, and very strongly curved backward, especially in the ♀.

Thorax smooth, finely and sparsely punctured. Section A.

Thorax rugous, coarsely and confluent punctured. Section B.

#### Section A.

All the femora toothed in both sexes.

Teeth of femora acute. armata.

militaris.

Teeth of femora obtuse. femorata.

Anterior femora alone armed with a tooth, or all the femora mutic.

Thorax sub-quadrate, frequently narrower in front, base very rarely narrowed, sides feebly rounded.

Elongate species, elytra never ventricose nor striate, femora mutic.

Thorax elongate. longicollis.

Thorax square. gentilis.

Species usually ventricose, elytra striate, femora of ♂ either acutely toothed or sinuate near the tip.

Anterior femora with a strong curved tooth in ♂ only. ventricosa.

“ “ “ straight acute tooth in ♂ and ♀.

Thorax deeply emarginate in front, angles not everted. lucæ.

“ feebly “ “ “ angles acute, everted. gracilis.

“ “ sinuate near the tip in ♂ and ♀. innocens.

Sides of thorax strongly rounded, always narrower at base.

Thorax very convex, humeral angles of elytra indistinct or wanting.

Anterior femora armed in both sexes. grandicollis.

Anterior femora mutic in both sexes. gigantea.

Thorax moderately convex, humeral angles of elytra always evident.

Ant. femora mutic in both sexes. nigrina.

Ant. femora armed at least in ♀.

Thorax with sides gradually narrowing to base.	
Elytra sulcate, interstices convex, impunctured.	<i>hispidabris.</i>
Elytra sub-striate, interstices with muricate punctures.	<i>sponsa.</i>
	<i>caudifera.</i>
Thorax strongly constricted at base.	<i>acuticauda.</i>
	<i>dentipes.</i>

## Section B.

Here are placed some small species with a very strongly punctured, moderately convex, sub-quadrate thorax, and with oval elytra with indistinct humeri.

Elytra granulate or rugose and frequently hairy.

Elytra not hairy, opaque, with rows of elevated rounded tubercles. *granosa.*

Elytra hairy, surface very coarsely and confluent punctured, shining. *hirsuta.*

Elytra opaque, sub-striate, with strongly muricate punctures, each bearing an erect black hair. *pilosa.*

## BLAPYLIS.

This name is proposed for a sub-generic division of *Eleodes*, in which the basal joints (usually three) of the anterior tarsi of the male are clothed with a dense silken pubescence, obliterating entirely the median groove, evident in the remaining joints and in the entire tarsus of the female.

Thorax feebly constricted at base; lateral margin entire, extending to base.	
Base of thorax rounded.	<i>scabripennis.</i>
Base of thorax truncate.	
Elytra convex, humeral angles very obtuse.	
Terminal joints of antennæ not compressed, antennæ apparently clavate.	<i>clavicornis.</i>
Terminal joints of antennæ flattened.	
Hind angles of thorax obtuse.	<i>lecontei.</i>
Hind angles of thorax rectangular.	
Elytra more or less shining, muricately punctured.	<i>consobrina.</i>
Elytra very opaque, with small rounded granules densely but irregularly placed.	<i>tenebrosa.</i>
Elytra depressed, humeral angles distinct.	<i>planipennis.</i>
Thorax very strongly constricted at base, lateral margin obsolete at constriction.	
Thorax smooth, coarsely and sparsely punctured.	<i>parvicollis.</i>
Thorax rugose, very coarsely and confluent punctured.	
Elytral sculpture of coarse punctures with the interstitial elevations more or less confluent into transverse plications.	<i>cordata.</i>
Elytral sculpture of elevated, distinct, smooth tubercles, in longitudinal series.	<i>pimelioides.</i>

## PROMUS.

The sub-genus *Promus* contains species more or less fusiform and with, at least, the basal joint of the anterior tarsi dilated and thickened and spongy pubescent beneath.

Base of elytra emarginate, angles produced, embracing the basal angles of thorax. Femora mutic.	
Elytral margin acute, surface opaque and sparsely pubescent.	<i>opaca.</i>
Elytral margin rounded, surface glabrous.	<i>fusiformis.</i>
Base of elytra very feebly emarginate, or truncate, angles acute, not prolonged, basal angles of thorax distinct. Anterior femora armed in the males.	
Tooth of femur very acute in ♂; elytra opaque, with distinct series of fine punctures.	<i>subnitens.</i>

Tooth of femur broad in ♂; elytra sub-opaque and with distant series of large punctures;  
 punctures distant from each other. *seriata*.  
 Male unknown. Elytra striate, striae approximate and with very closely placed punctures. *striolata*.

## Sub-Genus ELEODES.

This division contains all the large species, and the smallest is scarcely below the medium size. It may be distinguished from the other divisions by having the tarsi entirely setose beneath, never silken or spongy pubescent. The first joint of the anterior tarsus of the male is somewhat thickened in the first few species; this would never be mistaken for the marked expansion and peculiar vestiture of the *Promus* group. The form of mentum is also subject to some slight variation; this will be alluded to under the species themselves.

Group I. is characterized by the marked inequality between the spurs of the anterior tibiae, notably in the females, and in accordance with this variation we may again subdivide the group into two parts. Section I. contains the large sulcate species. With them the anterior spur of the anterior tibia is much smaller than the posterior, the latter though scarcely longer is much broader and more robust and obtuse at the tip. Here, also, occurs the thickening of the first joint of the anterior tarsus of the male.

*C. obscura*, Say, (Blaps) Journ. Acad. 3, 259. Am. Ent. tab. 16. (*Eleodes*) Esch.

I cannot accept the feeble differences between the five species described, as indicative of specific distinction. With very large series it would be difficult indeed to define even races. The three principal variations have been selected as centres, and may for convenience be called "races," each may receive separate notice, and the student be thereby the better enabled to determine either their validity as species, separation as races, or complete union as mere varieties.

*dispersa*, Lec.; *deleta*, Lec. Proc. Acad. 1858, p. 182.

Variations of sculpture alone form the differences between the three races. The middle lobe of the mentum is large, obtuse in front, coarsely punctured and elevated more or less along the median line, the lateral lobes are small, strongly inflexed, scarcely evident without careful examination. The head is often coarsely punctured, and the clypeo-frontal suture by no means rarely visible. Thorax broader than long, moderately convex and shining, and sparsely punctured, anteriorly truncate with obtuse angles. The sides are rather broadly rounded in front, slightly sinuate behind, margin fine, slightly reflexed, base feebly sinuate and one-fourth narrower than at the widest portion; the hind angles are never acute, though distinct, generally rectangular. The elytra vary in shape even in individuals of the same sex. Their form is, however, elongate oval, generally twice longer than broad, sides more or less rounded, occasionally sub-parallel in some males. The margin is never acute even at humerus, always rounded. The sculpture consists of very



indistinct striæ, with the whole surface rather densely and very irregularly muricately punctured. The anterior femora are armed in both sexes with a tooth, strong and acute in the male, very obtuse in the female and occasionally reduced to a mere sinuation.

This form occurs in New Mexico. Length 1.25 inch.

*obscura*, Say (references already given).

Differs from the preceding as follows: Elytra feebly sulcate, interstices convex and rather sparsely muricately punctured, the more densely in the striæ. This race is also smaller and shows more tendency in the elytra to become reddish brown than the others. It agrees in every respect with *dispersa* excepting the elytral sculpture. Its habitat is more northern than the preceding, occurring in Nebraska and Colorado.

Length 1.05 inch.

*sulcipennis*, Mann., Beitrag, 226; Mag. Zool. 1843, pl. 128; *arata*, Lec., Proc. Acad. 1858, p. 182.

This form is still more deeply sulcate than the preceding and has smoother interstices with fewer muricate punctures.

Specimens occur very abundantly in Oregon, northern California, and through Nevada and Colorado to New Mexico and Arizona.

Length hardly varying from 1.25–1.30 inch.

*E. acuta*, Say, (Blaps) Journ. Acad. 3, p. 258. Am. Ent. tab. 16. Esch. (Eleodes).

The form of this species is not greatly different from the preceding. The only constant character being in the greater acuteness of the elytral margin, especially near the humeral angle. The dorsum of elytra is more or less flattened, and in proportion to the extent of this depression the margin is more extended from the humeral angle until it is almost as evident, though never so acute as in the following species. The thorax is similar in form to *obscura* and lacks entirely the flattening and very acute margin of *suturalis*. The anterior femora are toothed, the female the more obtuse. The species occurs from Kansas to Texas and varies in length from 1.–1.40 inch.

*E. suturalis*, Say, (Blaps) Journ. Acad. 3, p. 257; Am. Ent. tab. 16; Esch. (Eleodes).

The general form of this species agrees with the two already mentioned, differing, however, in having both the thorax and elytra with a very acute margin, generally slightly reflexed in the latter, always so in the former, so that the dorsum appears either flattened or concave, in accordance with the degree to which they are upturned. The sides of the elytra are rounded, never parallel, the dorsum is always flat. The anterior femora are not very acutely toothed, frequently merely sinuate. Occurs abundantly in Kansas and Nebraska, and varies in length from .8 to 1.2 inch.

Many specimens have a broad red band along the suture of the elytra.

*E. texanus*, Lec., Proc. Acad. 1858, p. 182; Thomson. Arcana, 1, pl. XII, fig. 5.

Acutely margined as in the preceding. The thoracic margin is much wider and more

reflexed. The thorax is broader, sides more strongly rounded, apex deeply emarginate with acute angles, base trisinuate also with acute angles. The elytra are also more acutely margined than *suturalis*, the dorsum slightly concave, longer and more parallel and in the males slightly produced, their surface is also feebly sulcate with striæ of coarse, closely placed punctures. The anterior femora of the male are armed with a rather small acute tooth.

This species has thus far occurred in Texas alone. Length 1.25–1.50 inch.

Section II. of Group I. contains all those species of the sub-genus *Eleodes* in which the anterior spur of the anterior tibia is notably longer, broader, thicker and more strongly curved than the posterior spur, in the females.

*E. pedinoides*, Lec., Proc. Acad. 1858, p. 183. *asperata*, Lec., (loc. cit.)

The peculiar form of the elytra distinguishes this and the next from the others of the section which follow. The sides are sub-parallel, very feebly rounded and scarcely narrower (frequently broader) at base than at any other portion. The base is also truncate and the angles rectangular, extending under the basal angles of the thorax. In both species the middle lobe of the mentum is smaller, rather more acute and more prominent in front than the species in the preceding section. The form of the thorax of *E. pedinoides* is similar to that of *acuta*. The anterior angles are not acute and the posterior are rectangular. The base feebly emarginate and with an impression near each hind angle. The sides are rounded anteriorly, slightly sinuate posteriorly. The elytra are oval, not narrowed at base, black, glabrous, and never pubescent, feebly sulcate with moderately convex interstices. The striæ are rather coarsely punctured in some specimens, less evidently in others. In the variety *asperata* the punctures become slightly muricate at the sides near the apex. The elytra are also moderately convex, margin rounded, the humeri are occasionally slightly carinate. The femora are mutic in both sexes.

Occurs in southwestern Texas. Length .75–.95 inch.

*E. tricostrata*, Say, (Blaps) Journ. Acad. 3, 262; Lec. (*Eleodes*); *alternata*, Kirby, (*Pimelia*) N. Z., 232; *planata* || Sol., (*Eleodes*) Baudie Truqui, p. 266, (indicated by error as from Spain); *robusta*, Lec., Proc. Acad., 1858, p. 183.

Similar in form to *pedinoides*, differing in the following characters: Elytra usually flattened, margin more acute, alternate interspaces more elevated, the shallow sulci are rather strongly muricately punctured, each puncture with a short robust hair in recent specimens. The elytra are never shining as in *pedinoides*, and the peculiar sub-tricostation will readily distinguish it. The variety *robusta*, as the name indicates, is larger, stouter and rather more coarsely muricate.

The species is abundant on the plains of Kansas and Nebraska and southward into Texas. Length .50–.90 inch.

Following the Pediniform species, we have another sub-section still having the anterior spur of the anterior tibia larger than the posterior, but differing especially in the form of the elytra. In these the humeral angles of the elytra are but feebly prominent, and the base feebly emarginate; the elytra themselves are always convex, never flattened and sub-acute on the margin. The thorax is usually narrowed at base, the angles never prominent nor overlapping the elytral base.

*E. carbonaria*, Say, (Blaps) Journ. Acad. 3, 260; Lec. (Eleodes); *soror*, Lec., Proc. Acad. 1858, 185; *immunis*, Lec., ib., 186; *debilis*, Lec., ib., 185.

This species as above defined may be known from all the others of the sub-section by the smooth polished elytra, with rows of large punctures rather distantly placed, the interstices of the rows are flat. In some specimens the punctures are small, though in other respects the characteristics of the species, such as the polish, the distance between the rows, are still present. In some specimens of *quadricollis* there is an evident tendency to the arrangement of the punctures in rows; in these, however, the interstices will be seen to be very distinctly diffusely punctured, besides lacking the peculiar appearance of *carbonaria*, readily remembered after sight.

I have united several other species with *carbonaria*, as may be seen above. Of these, I am absolutely unable to distinguish even as faint varieties, *soror* and *immunis*. *Debilis* is a very small form from the mountainous region around Santa Fe, and differs from the typical form only in having the thorax slightly more transverse and widest at the middle, while the others have the thorax widest in front of the middle. From the known degree of variation of other species and from the fact that this possesses all the other characters of the species, I am unwilling to retain it as distinct.

The species is rather abundant in southern Colorado, New Mexico and eastern Arizona and Texas.

Length .65–1.00 inch.

*E. obsoleta*, Say, (Blaps) Journ. Acad. 3, 261. (Eleodes) Lec.

This species has mutic femora also, and may be known by the sulcate or striate elytra. The suture is frequently reddened, the striae are marked with coarse punctures and the interpaces coarsely muricately punctured. The form is usually robust, occasionally elongate in the males, elytra rather broadly oval and feebly convex on the disc. As in *carbonaria*, the thorax is sub-quadrate, sides and base feebly rounded, anteriorly very feebly emarginate.

Occurs abundantly on the plains of Kansas and southward to New Mexico.

Length .50–.80 inch.

*E. quadricollis*, Esch., Zool. Atl. III., p. 12, tab. 14, fig. 5. Mann., Beitrag, 268; *omissa*, Lec., Proc. Acad. 1858, 186; *vicina*, Lec., Ann. Lye. 5, 133.

Very similar in form to *obsoleta*. The elytra are more convex, totally black, with

sculpture consisting of punctures sometimes fine, at others rather coarse, rather densely but irregularly placed and never muricate, never arranged in rows. The femora are mutic in both sexes. The thorax is also narrower at base than in the two preceding species. The elytra of the female are always broadly oval, those of the male elongate, scarcely broader than the thorax.

Occurs in California, from San Francisco to San Diego on the coast, and inland from San Jose to Tejon. Specimens have been sent from Sonora.

Length .60-.80 inch.

*E. humeralis*, Lec., *Pacif. R. R. Surv.* 47 parallel, App. 1, p. 50.

Differs from the preceding in the rather deeper emargination of the base of the elytra, and by the humeral angles a little more prominent. The elytra are always opaque to a greater or less extent, and very densely muricately punctured or almost granulate. The femora are mutic.

Occurs in northern California and Oregon, where it replaces *quadricollis* of the southern regions.

Length .54-.68 inch.

*E. granulata*, Lec., ♀; *obtusa*, Lec., *Proc. Acad.* 1861, p. 352, ♂; *aspera*, Lec., *New Species*, 115; ? *subaspera*, Sol., *Stud. Ent.* 246.

From all the other species this may be readily distinguished by the elytral sculpture, consisting of rows of moderately elevated, rather smooth tubercles with opaque interspaces. Its form is similar to the male of *quadricollis*. I have placed it in association with *extricata*, a species with armed anterior femora, although its femora are scarcely toothed, but strongly sinuate near the tip. The other preceding species have the femora of both sexes entirely without either a tooth or the suspicion of a sinuation. The specimens in our collections appear to be rather poorly developed, and from what occurs in other species it is inferable that fully developed forms may have a very distinct tooth in the males. I have united *aspera* as a synonym, although the specimen is not before me. I believe it to be merely a more roughly sculptured form, bearing the same relation to *granulata* that *asperata* does to *pedinoides*.

Occurs as follows; *granulata*, Oregon; *obtusa*, California; *aspera*, New Mexico.

The three specimens scarcely vary from .60 inch. The last synonym is placed here doubtfully. Should it prove to be identical with *granulata*, this name must be suppressed and the name of Solier used instead.

*E. extricata*, Say, (*Blaps*) *Journ. Acad.* 3, 261. Lec. (*Eleodes*); *cognata*, Hald., *Stansb. Rep.*, App. C, p. 376.

Readily distinguished from all others of the sub-section by the very evident tooth of the anterior femur of the male, as well as by the rather more slender form of that sex.



The thorax is finely and very sparsely punctured, the elytra coarsely and densely, with a faint tendency to the arrangement of the punctures in lines, more evident in the smoother varieties of the species. *Cognata*, Hald., is merely a more robust and rather smoother form of *extricata*.

Occurs abundantly on the plains of Kansas and Nebraska, and some few have been obtained in Utah and eastern Oregon.

Length .42-.56 inch.

#### Group II.

This group is distinguished readily from the preceding, by having the spurs of the anterior tibiae very nearly equal in size and in no way differing from each other in thickness and shape.

Section I. contains the bulk of the species of the group, and may be recognised by the smooth, sparsely punctured thorax.

The three following species differ from all the others, by having all the femora of each sex armed with a very distinct tooth, large and strong in the first two, small in the last. The tibiae are also more strongly curved than in any others of the genus.

*E. militaris*, n. sp., black, moderately shining, elongate, similar in form to *femorata*. Thorax ♂ sub-quadrate, moderately convex, sides rounded, feebly converging at base; apex rather deeply emarginate, angles acute, not dentiform; base feebly rounded, angles not prominent; ♀ thorax one-third broader than long, more convex at sides, moderately rounded, not converging at base; apex as in male, base truncate or feebly rounded, notably broader than apex, angles not prominent. Elytra elongate oval, strongly attenuate behind, very convex above, with distant rows of rather fine and distant punctures. Legs coarsely punctured. Prosternum prolonged, horizontally mucronate. Mesosternum slightly concave. Length .86-1.00 inch.

Lower California. Mr. Wm. M. Gabb.

The sexes of this species differ from each other, in the form of the elytra, the female as usual being the broader and more robust, and also in the form of the thorax. In the ♂ there is scarcely any difference between the thoraces of *femorata* and *militaris*, while that of the female of the latter species is much broader, the sides regularly rounded to the basal angles and the base broader near the apex. In both sexes all the femora are armed with a very strong triangular tooth, broader but less acute than *armata*. This species differs from *armata* in the character last given, and also in its much less prominent and never dentiform apical thoracic angles. The elytra approach the form of *femorata*, and are more attenuate behind than in *armata*. The peculiar form of thorax causes the female to appear more obtuse in front.

*E. armata*, Lec., Ann. Lyc. 5, 134; Thomson, Arcana 1, Pl. XII, fig. 2.

The elytra of this species are less attenuate, rather more suddenly declivous behind than either of the others of the group. The anterior angles of the prothorax are acute, usually prominent and dentiform. Further comparison between this and the preceding

species is unnecessary, while from the following it may be distinguished by having very much more prominent femoral spurs and by the form of the elytra already mentioned.

Occurs abundantly on the Colorado Desert (Leconte); those in my cabinet are from central Arizona, where it exceeds all other insects in abundance except *E. hispilabris*, Say, (sulcata, Lec.) Length .58–1.30 inch. The greater number are over one inch in length.

*E. femorata*, Lec., Ann. Lyc. 5, 134.

The teeth of the femora are all very obtuse.

Occurs at San Diego, California.

Length .68–1.00 inch.

The species of the section hereafter noted differ from the three preceding, in having only the anterior femur (if any) toothed.

In accordance with the form of thorax the species may be again sub-divided, those with a sub-quadrate thorax with very feebly rounded sides, and with the base rarely narrower will be mentioned first.

*E. longicollis*, Lec., Ann. Lyc. 5, 134. *Haydenii*, Lec., Proc. Acad. 1858, p. 186.

Frequently elongated fusiform in shape, thorax generally longer than broad, sides feebly rounded, base always broader than apex. Femora mutic in both sexes. The elytra are smooth or feebly punctured, never striate.

Occurs abundantly in New Mexico and Arizona, and occasionally in Kansas and Colorado.

Length .90–1.25 inch.

*E. gentilis*, Lec., Proc. Acad. 1858, p. 187.

The femora are mutic as in *longicollis*, from which it differs in its smaller size, more quadrate thorax with more rounded sides and rather more prominent anterior angles.

Occurs at San Diego, Cal.

Length .75 inch.

*E. ventricosa*, Lec., Proc. Acad. 1858, p. 168.

With this species commences a series with the anterior femora of the ♂ (and frequently ♀) armed with an acute tooth or sinuate. The elytra are also feebly sulcate and rows of rather coarse punctures. In this the elytra are strongly ventricose in both sexes, and also caudate in the male. The anterior femora of the male are armed with a robust tooth, strongly curved. The thorax is broader than long, with sides and base moderately rounded, anteriorly feebly emarginate, angles distinct, not dentiform.

Occurs in Texas, near the Rio Grande.

Length 1.05–1.40 inch.

*E. lucæ*, Lec., New Species, p. 114.

The species is more elongate than the preceding, and very feebly ventricose in the female. The elytra are more deeply striate and also caudate in the male. The thorax has feebly rounded sides, an almost truncate base, apex emarginate, angles distinct, never dentiform. Both sexes have the anterior femora armed with an acute-straight tooth.

Abundant near Cape St. Lucas, Lower California, where it replaces *gracilis* of Arizona and the northern end of the Peninsula.

Length .70–1.04 inch.

*E. gracilis*, Lec., Proc. Acad. 1858, p. 184.

As in *lucæ*, the anterior femora of both sexes are armed with an acute tooth. It differs by its more elongate form, the dentiform anterior angles of the thorax, as well as by the thorax being narrower behind and the sides more strongly rounded. The male is never caudate.

From New Mexico, Arizona, and the upper end of the Peninsula of Lower California.

Length .78–.94 inch.

*E. innocens*, Lec., New Species, p. 114.

The femora of this species are feebly sinuate. The elytra are rather strongly striate, as in *lucæ*. The thorax is slightly longer than broad, with feebly rounded sides and truncate base. The apex is very feebly emarginate, the angles prominent, not dentiform.

From Cape St. Lucas.

Length .54 inch.

The following species have the thorax rounded on the sides and with the sides more strongly convergent at base, frequently rather suddenly constricted.

The first two species have the thorax very convex, hind angles obtuse, humeral angles of elytra wanting. In both the elytra are smooth or faintly punctured, never striate or sulcate.

*E. grandicollis*, Mann., Beitr., p. 266; Mag. Zool. 1844, pl. 130. *valida*, Boheman, Eugen. Resa. Ins. p. 90.

The elytra are rather broadly oval in outline. The anterior femora are toothed in both sexes. Dr. Leconte mentions the synonym in Proc. Ac. Nat. Sci. 1859, p. 290, but it has been accidentally omitted in his List of Coleoptera.

Occurs near San Francisco, Cal.

Length 1.–1.20 inch.

*E. gigantea*, Mann., Beitr., p. 267; Mag. Zool. 1843, pl. 127.

More elongate and attenuate than the preceding. The femora are mutic in both sexes.

Occurs at San Francisco, and in the Sacramento Valley around the bay.

Length 1.10–1.40 inch.

*E. nigrina*, Lec., Proc. Acad. 1858, p. 186.

With this species commences a series in which the humeral angles of the elytra are much more distinct than in the two preceding. The thorax is also much less convex. From the species following, this one may be readily known by the femora being merely feebly sinuate in both sexes. The elytra are feebly striate, with muricate punctures not very densely but very irregularly placed. The males are rather more slender than the females. The elytra of both are sub-opaque, a character otherwise unknown in the group. More decidedly Upiform than any other species.

Occurs in Oregon, thence eastward to Dakota, and southward into Colorado and western Kansas.

Length .60-.86 inch.

*E. hispilabris*, Say, (Blaps) Journ. Acad. 3, 260; Am. Ent. pl. 16. *sulcata* || Lec., Proc. Acad. 6, 67; *conceva*, Lec., Pacif. R. R. Repts., App. 1, p. 49; *nupta*, Lec., Proc. Acad. 1858, p. 183.

I have no hesitation in applying the name of Say to one of our species, better known under the pre-occupied designation *sulcata*, Lec. The description and figure of Say appear to me perfectly applicable to this and not to one of the larger species of Group I. The prominent dentiform anterior thoracic angles, so well described and figured, are not found in any species of the *obscura* series. I am unable to find characters warranting the division of the species into three others, the forms so completely passing from one to the other without a break in the series. The species may be readily distinguished from all those having the same form of thorax, by the more or less deeply sulcate elytra, with convex interstices. The striae are punctured and the interstices smooth. In the variety *nupta*, the elytra are rather more convex and broader, and the sulci less deep, and the interstices consequently much less convex.

Occurs abundantly in Oregon and Arizona, Kansas, Colorado and Texas. Say's specimens came from "Missouri," a very badly defined geographical region in his day.

Length .70-1.05 inch.

*E. sponsa*, Lec., Proc. Acad. 1858, p. 184.

In general form this species resembles the preceding. The thorax is, however, less rounded on the sides and more nearly quadrate. The anterior angles are acute and frequently prominent. The elytra are elongate oval, slightly flattened, feebly sub-striate and with the interstices rather coarsely muricately punctured. The apex is moderately acute in the male, never prolonged or caudate. The anterior femora of the males are furnished with an acute tooth, the females with one more obtuse.

Occurs in southern Colorado and eastern New Mexico.

Length .80-.96 inch.



*E. caudifera*, Lec., Proc. Acad. 1858, p. 184.

Differs from the preceding as follows: Males with the apex of elytra prolonged or caudate; anterior femora armed with an obtuse tooth in the males, mutic in females.

Occurs with the preceding.

Length .70–.90 inch, exclusive of elytral prolongation.

*E. acuticauda*, Lec., Ann. Lye. 5, 135; *laticollis*, Lec., ib.

In this species the thorax is at least one-half broader than long, sides very strongly rounded, base strongly constricted; anterior angles very acute, prominent and dentiform. The elytra are elongate and strongly produced in the male, not suddenly caudate. The sculpture consists of striae of fine punctures. The anterior femora of both sexes are acutely toothed, tooth rather small.

Occurs only in extreme southern California. The synonym belongs to a larger and narrower form.

Length .90–1.30 inch.

*E. dentipes*, Esch., Zool. Atl. 3, 10, pl. 14, fig. 4; Mann. Beitrag. 267; Guerin. Mag. Zool. 4, 31, pl. 117.

The thorax is much less broad than *acuticauda*, the sides less rounded and the anterior angles less prominent, and the elytra are never as produced. Both sexes have the anterior femora armed, though the tooth is less prominent and broader than in the preceding species.

The most abundant species in California south of the latitude of San Francisco, and very variable both in sculpture and general form.

Length .62–1.05 inch.

#### Section B.

*E. granosa*, Lec., New Species, p. 116.

The elytral sculpture of this species is peculiar and without any parallel in the genus.

One specimen in the cabinet of Dr. Leconte, from California, another in my own, from Nevada, collected by Mr. Wm. M. Gabb.

Length .65–.75 inch.

*E. pilosa*, n. sp., black opaque. Head coarsely and densely punctured, sparsely clothed with short, black, sub-erect hairs. Thorax sub-quadrate, feebly narrowed behind, sides moderately rounded, margin hardly evident; apex and base truncate, angles not prominent; above very coarsely and confluent punctured with erect black hairs. Elytra oval, moderately convex, humeri indistinct, surface faintly sub-striate with densely and irregularly placed muricate punctures, each bearing a rather long black hair. Beneath muricately punctured and setose, abdomen more shining, less densely punctured. Femora mutic in both sexes.

Occurs abundantly in Owens' Valley, California, and in western Nevada (Gabb).

Length .46–.60 inch.

*E. hirsuta*, Lec., Proc. Acad. 1861, p. 352.

Readily known from the two preceding, by the shining, densely punctured and pubescent elytra. Its form is more robust and the elytra more broadly oval.

From the same regions with *pilosa*.

Length .40-.44 inch.

Occurs in Owens' Valley, California, (Horn), and western Nevada (Gabb).

#### Sub-Genus BLAPYLIS.

This sub-generic name is proposed for some small species in which the males have two (sometimes three) basal joints of the anterior tarsi clothed with a rather dense silken pubescence, obliterating entirely the groove. These joints are never dilated nor thickened. The femora are all unarmed. The thorax has rather strongly rounded sides, and always greatly narrowed at base, frequently constricted, appearing to be almost pedunculate. The elytra are oval, strongly rounded on the sides, humeral angles usually obtuse. The tibial spurs are usually short, stout and sub-equal.

This assemblage of characters will readily distinguish the species of this sub-genus, of which *cordata* may be considered the central form. The peculiar tarsal vestiture is seen also in the following sub-genus, where it becomes more spongy, and in *ventricosa*, where the anterior tarsi of some males are more hairy than spinous.

Two sections are found in the sub-genus. The first contains species with a less strongly constricted thorax, and with the lateral margin extending to the basal margin.

*E. scabripennis*, Lec., Proc. Acad. 1859, p. 77, ♀; *inculta*, Lec., Proc. Acad. 1861, p. 352, ♂.

The base of thorax is rather more strongly rounded, the disc much less convex, and the sides much less rounded than any of the species of the sub-genus. The elytra are very densely and irregularly muricately punctured.

From Santa Barbara and Ft. Tejon, California.

Length .55-.65 inch.

*E. clavicornis*, Esch., Zool. Atl. 3, p. 11 Mann. Beitrag. 270; *impressicollis*, Bohemann, Eugen. Resa. Ins., p. 90.

The *impressicollis* of Bohemann, is merely a specimen of this species with two thoracic foveæ. Accidental varieties of this kind frequently occur in many of the species, especially in small individuals.

This species is among the smallest of the genus, and may be easily recognised from the characters given in the table. The middle lobe of the mentum is much more acute and prominent than in its allies, resembling somewhat that of the larger species previously

cited. The elytra are rather coarsely and densely punctured in scarcely evident lines, each puncture bearing a short hair.

Occurs in California from San Francisco to the head of Sacramento Valley.

Length .36-.50 inch.

*E. lecontei*, Horn: *subaspera* || Lec., New Species, p. 115.

I change the name given it by Leconte, Solier having used the name many years before. Closely allied to *consobrina*. The sides of the thorax are regularly rounded to the basal angles, and the angles scarcely evident. The elytral sculpture consists of irregularly but closely placed granules.

Found in Colorado.

Length .60 inch.

*E. consobrina*, Lec., Ann. Lye. 5, p. 135; *reseyi*, Lec., Proc. Acad. 1858, p. 187.

This species begins a series with the thorax more strongly constricted at base; in this and the two following, however, the lateral line still extends to the base. The elytral sculpture consists of muricate punctures rather irregularly placed on the disc, becoming tubercles on the sides.

Abundant at Fort Tejon, California.

Length .60-.74 inch.

*E. tenebrosa*, black, opaque. Head rather coarsely punctured; thorax one-third broader than long, very coarsely punctured, becoming granular at the sides; sides strongly rounded, margin entire, basal angles moderately prominent, rectangular; elytra elongate oval, moderately convex, sides moderately rounded, basal angles obtuse, surface rather densely and irregularly covered with small, rounded, shining tubercles, arising from a very opaque base. Under surface and legs coarsely and densely punctured.

From Owens' Valley, California, (collected by myself), and from western Nevada (by Mr. Gabb).

Length .54½-.65♀ inch.

The elytra are scarcely broader at their broadest part than the thorax, and much less rounded on the sides than any species of this section of the sub-genus.

*E. planipennis*, Lec., New Species, p. 116.

The elytra of this species are quite flat on the disc, and the margin less obtuse than the other species. The thorax is also more deeply emarginate in front, and the anterior femora rather more strongly sinuate. The elytra are also more finely and less densely muricately punctured.

From eastern New Mexico.

Length .64 inch.

The second section of the sub-genus contains those species in which the thorax is strongly constricted at base, almost pedunculate, and the lateral marginal line not attaining the basal margin. On account of the extreme variation of which the species are susceptible, many more names have been applied to the varieties than we can draw lines to separate. On account of the difficulty of ascertaining accurately the forms to which Eschscholtz's names were applicable, Dr. Leconte obtained types from Europe, some of which were carefully compared by the late Dr. Schaum, while others were furnished by Menetries and Motschulsky from the original collection of Eschscholtz, and with this assistance and the large numbers of specimens in Dr. Leconte's cabinet and my own, I can safely assert that but three species should be recognized in the fourteen varieties already known to us.

*E. parvicollis*, Esch., Zool. Atl. 3, p. 12; Mann. Beitr. 271; *planata*, Esch., et Mann. loc. cit.; *producta*, Mann., loc. cit.; *parvicollis*, Esch., et Mann. loc. cit.; *scabrosa*, Esch., et Mann., loc. cit.; *constricta*, Lec., Proc. Acad. 1858, p. 187.

This species has the thorax comparatively smooth. The punctures, though rather coarse, are never confluent, and the thorax has never the scabrous appearance of the two succeeding species. The elytra are also rather coarsely punctured than intricately rugose, as in the next. The form of elytra varies greatly, and on this alone have been founded the numerous names cited above as synonyms.

*E. producta* has the humeral angles very distinct and the disc of the elytra more flattened, approaching in this respect *planipennis*. The humeral angles, however, become less distinct, and at the same time the disc more convex, and the transition is very gradual and easy through *planata* and *parvicollis* to *scabrosa*. Typical specimens of all the species are before me, and it is easy to complete series leading gradually from one form to the other, all preserving, however, the common characters given in the synoptic table.

This species is abundant at San Francisco and around the bay in a southerly direction. Length .42-.64 inch.

*E. cordata*, Esch., Zool. Atl. 3, p. 12; Mann. Beitr., p. 273; *tuberculata*, Esch., et Mann. loc. cit.; *intricata*, Mann., Beitr., p. 273; *rotundipennis*, Lec., *stricta*, Lec., Pacif. R. R. Reports, App. 1, p. 50.

Differs from the preceding in having the thorax densely and confluent punctured. The sides of the thorax are more strongly rounded in front, behind the middle narrowing rather suddenly, causing them to appear somewhat sub-angulate. This character is seen in the next species, but never in the previous one. The elytra are also more rugose, the spaces between the punctures are elevated and convex, and more or less confluent transversely.

The species is abundant in the region of San Francisco, extending its range to the southward through the Sacramento Valley and into Oregon, where it is replaced by the next species.

Length .40-.62 inch.



*E. pimelioides*, Mann., Beiträg. 274; Mag. Zool. 1843, pl. 129; *viator*, Lec., Proc. Acad. 1858, p. 188; *sublicata*, Lec., Pacif. R. R. Rep., App. 1, p. 50.

The elytra of this species are more opaque than either of the preceding, and have rows of small rounded tubercles placed in rather regular series, less distinct along the suture. The form of thorax is similar to the preceding, and is coarsely and confluent punctured.

Abundant in Oregon and Montana, and is distributed in the same manner as *nigrina*, except that it does not extend into New Mexico.

Length .38-.54 inch.

In all the species of this sub-genus the middle lobe of the mentum is rather broader, more obtuse in front (except *claricornis*), and the lateral lobes much less evident than in the normal Eleodes (sub-gen.) In *claricornis* the middle lobe is rather prominent and more produced.

#### Sub-Genus PROMUS.

The first and second joints of the anterior tarsi of the male are thickened and flattened beneath, and densely clothed with a very fine almost spongy pubescence. Combined with these there is a peculiar more or less fusiform outline to the species. The sides of the thorax always converge anteriorly, and the elytra become gradually broader in the same line with the sides of the thorax.

*E. opaca*, Say, (Blaps) Journ. Acad. 3, p. 262; (Eleodes) Lec.; (Promus) Lec., Class. Col. N. Am., p. 226.

In this species the dorsum of elytra is quite flat, the margin rather acute, the surface is opaque and sparsely covered with short recumbent setose hairs. The base of elytra is deeply emarginate, the angles clasping the obtuse basal angles of the thorax. The first two joints of the anterior tarsus of the male are distinctly broader. The femora are unarmed.

Occurs abundantly on the plains of Kansas and Colorado.

Length .42-.50 inch.

*E. fusiformis*, Lec., Proc. Acad. 1858, p. 184.

Similar in form to the preceding. The dorsum is, however, much less flattened and the margin not acute. The surface is black and shining, neither opaque nor pubescent, but rather finely and closely sub-seriately punctured. The elytral humeral angles clasp the angles of the thorax. The femora are mutic. The joints of the anterior tarsi can hardly be called dilated, still their *vertical* measurement is greater than that of the female, in which the joints are nearly cylindrical. There need be no doubt as to the position of the species, its peculiar form and produced humeral angles show its relationship with *opaca*.

Occurs rarely, on the plains of Nebraska, southward through New Mexico, and is more abundant, though by no means common, in Texas.

Length .50-.60 inch.

*E. seriata*, Lec., Proc. Acad. 1858, p. 185.

The elytra of this species are frequently inflated in the female, always very convex and without any semblance of even an obtuse margin. Their sculpture consists of distant rows of large and rather distant punctures. The anterior femora of the male are armed with an obtuse tooth, and the two basal joints distinctly thickened and dilated.

Occurs in New Mexico and Texas.

Length .66–.80 inch.

*E. subnitens*, Lec., Ann. Lyc. 5, 134.

Similar in form to *seriata*, but less robust and more fusiform. The elytral margin is regularly rounded, as in the preceding species. The surface is sub-opaque and the sculpture of distant striae of fine punctures. The male has an acute tooth to the anterior femur, and the two basal joints very distinctly thickened.

The unique specimen came from the region of Arizona traversed by the Gila River.

Length .70 inch.

*E. striolata*, Lec., Proc. Acad. 1858, p. 185.

It is not without some misgivings that I place this species in the present sub-genus. Three specimens are known to me, all females. The anterior spurs of the anterior tibiae in all the species of *Promus*, are similar in structure to that seen in Section B, Group I. *Eleodes*, thus increasing the difficulty of assigning places in the genus to females when the male is unknown. The anterior femora of the specimen before me are very feebly sinuate, and should the male prove to have simple tarsi and a toothed femur, the species should be placed near *extricata*. As in the two preceding species, the basis of elytra are very feebly emarginate, the angles acute, neither prolonged nor clasping the thoracic base. The surface is marked with approximate striae of rather fine punctures. The apex of elytra is faintly prolonged, with the tips of the elytra slightly separated.

Occurs in southwestern Texas and adjoining regions of Mexico.

Length .65–.77 inch.

#### DISCOGENIA, *Lec.*

*Discogenia*, Lec., New Spec. 117.

This genus differs from *Eleodes* by very feeble characters, the value of which may be at any time lessened by the discovery of intermediate forms. The “mentum is quite flat, not at all trilobed, but transverse, widened from the base to the middle, then rounded, both at the front and sides, the lateral angles being also rounded at tip; the surface is punctured and is foveate on each side near the angle.” The epipleurae of the elytra, as in *Eleodes*, are rather suddenly dilated at base and are slightly visible from above. The tarsi are similar in both sexes and rather coarsely spinous beneath. The tibial spurs are similar in the sexes and nearly equal.

*D. marginata*, Esch., (Eleodes) Zool. Atl. 3, 10; Mann. Beitrag. 269. *Fischeri*, Mann., Rev. Zool. 1840, p. 137; Beitrag. 269. Lec. (Discogenia) New Species, 117.

The thorax is broader than long, strongly rounded on the sides and finely margined, and with the hind angles not prominent; anteriorly feebly emarginate angles obtuse. The elytra are oval, rather pointed behind, and scarcely wider than the thorax, the humeral angles are obtuse. The anterior femora of the male are armed with an obtuse tooth, the femora of the female are mutic.

Occurs not abundantly in the region surrounding the Bay of San Francisco.

Length .56-.82 inch.

*D. scabricula*, Lec., (Eleodes) Proc. Acad. 1858, p. 187; (Discogenia) New Species, p. 117.

This species is more robust, much more rugosely sculptured, and differs especially in the anterior femora of the female being armed with an obtuse tooth.

Length .76 inch.

#### EMBAPHION, Say.

*Embaphion*, Say, Journ. Acad. 3, p. 253; Lacordaire Genera V., p. 152.

This genus is separated from *Eleodes* by rather feeble characters. The epipleuræ are always narrow, the suture rarely visible except at apex, at base scarcely and not suddenly wider, never attaining the humeral angles of elytra. The anterior tibiæ at base are very distinctly sinuate in the males, less in the females. The thorax and elytra are always acutely, sometimes broadly, margined; the elytral margin more or less distinctly reflexed. The mentum is trilobed, the middle lobe broad, rounded in front, the lateral lobes small and inflexed.

*E. muricatum*, Say, Journ. Acad. 3, 251; *concarum*, Lec., Proc. Acad. VI, p. 446; Thomson, Arcana 1, pl. xii, fig. 10.

This species may be readily distinguished from the others of the genus by the very broad foliaceous margin of the thorax and elytra, very strongly reflexed. The elytral margin extends beyond the apex and the two meet on a line with the suture. The thoracic margin is broad and widens behind, so that the hind angles are prominent, sub-acute, and project backwards over the basal angles of the elytra. The thorax itself (less the margins) is narrow, longer than broad, and about equal to half the width of the elytra (without margin). The disc of elytra (without margin) is elongate oval, the humeral angles not prominent and are rounded. The angles formed by the margin are nearly right. The base of the thorax is strongly trisinuate; the base of the thorax proper being rounded, that of the margin on each side emarginate. The base of elytra is emarginate at middle, and on each side broadly rounded. *Concarum*, Lec., is merely a large form with more strongly reflexed margins. The elytra of both forms are sculptured with approximate series of fine punctures, each bearing a short hair.

Occurs rather abundantly from Kansas to Texas.

Length .50-.76 inch.

*E. contusum*, Lec., Journ. Acad., Ser. 2, 4, p. 40; Smithson. Cent. 1859; Col., Kans. and New Mex. 15, pl. 1, fig. 8.

This species may be known by the broader thorax (proper), with narrower, less reflexed margins. The margin is, however, thin, as in the preceding, and formed by the sudden attenuation of the sides of the thorax. The sides of the margin are rounded from apex and not broader at base. The basal angles are broadly rounded. The base of thorax has the hind angles more prominent than the middle of the base, the middle very squarely truncate. The elytra are elongate oval, and the humeral angles (without margin) distinct, though obtuse, the margin is acute, slightly reflexed, and *always attaining the apex* of the elytra. The males are always provided with an apical prolongation of the elytra, rather abrupt and with the tips slightly separated. The epipleuræ are always poorly defined except near the apex. The sculpture above is similar to the preceding species; specimens from Arizona are more opaque.

Occurs from Kansas to Arizona.

Length .50-.78 inch.

*E. elongatum*. This is the most elongate of our species, the elytra being fully twice longer than broad. The thorax is less margined than the preceding, and the disc moderately convex above, evidently narrower behind. The thorax is emarginate in front, less deeply than the preceding. The middle of the base is slightly prolonged, and the angles formed by the margin very obtusely rounded. The elytra are elongate, feebly rounded on the sides, gradually narrowing to apex and attenuate, margin acute, not foliaceous, extending to apex. Humeral angles distinct. Epipleuræ indistinctly defined except at apex. The legs are long and slender, the hind femur longer than the first four abdominal segments. The head is sparsely muricately punctured, the thorax is sparsely punctured on the disc, granular on the margins, the elytra are sculptured as in the preceding species.

Occurs in western Nevada. For the only specimen in my cabinet I am indebted to Mr. Wm. M. Gabb, of the Geological Survey of California.

Length .60, width .20 inch.

*E. planum*. Thorax one-half broader than long, feebly convex above and slightly narrower behind, anteriorly not deeply emarginate, posteriorly with the middle of base truncate, not prolonged, margin acute, not foliaceous nor suddenly formed. Margin gradually rounded, slightly broader behind, hind angles obtuse, rounded and slightly projecting beyond the middle of the base. Elytra elongate oval, sides rounded, gradually narrowing to apex and acute behind, not caudate. Margin acute, feebly reflexed, not attaining the apex. Disc flattened, never concave, angles distinct, rounded, middle of base prolonged. Epipleural limits distinctly defined. The sculpture is similar in all respects to *contusum*.

In this species the thorax is broader than one elytron and nearly equals the breadth of one-and-a-half. It may be readily distinguished from *contusum* by the width of the disc of the thorax, by the males being never caudate or having suddenly acute elytra, by the greater distinctness of the epipleural limits and by the margin of the elytra never attaining the apex.

Occurs in Kansas and Colorado.

Length .26-.70 inch.



*E. depressum*, Lec., (Eleodes) Ann. Lyc. 5, 136; (Embaphion) List of Col. N. A., p. 60.

In this species the thin margin is almost totally wanting. The thorax is moderately convex, one-third broader than long, very coarsely punctured, slightly narrower behind. The sides are moderately rounded. Anteriorly rather feebly emarginate, posteriorly with the middle of the base slightly prominent, angles obtuse. Elytra broadly oval, base emarginate, angles prominent, sides strongly rounded, gradually narrowing to apex. Marginal line attaining the apex. Epipleuræ limited by a very distinct elevated line. Third abdominal segment placed obliquely to the second, especially evident in the males. The antennæ, legs, parts of mouth and last two abdominal segments, are ferruginous brown in color. The elytra have rows of moderately coarse punctures, bearing short hairs, and are generally more rugose than any of the preceding species.

This is the most robust species of the genus, and is especially noticeable in having the thorax and elytra more distant. The antennæ are also shorter and stouter, and with the basal joints more pubescent.

Occurs rarely at Vallecito (Leconte), Maricopa Desert (Horn).

Length .38-.44 inch.

In a review of the species of *Embaphion*, it will be particularly noticed that there is a gradual lessening of the foliaceous margin from *muricatum* to *depressum*. In consequence of this, the anterior emargination of the thorax diminishes from the deep notch with almost parallel sides, almost equalling in depth the length of the head, (*muricatum*) to the simple broad shallow emargination so frequently seen in *Eleodes*. In the broadly margined species the thorax proper is narrow, sometimes longer than wide, and with a diminution of the margin the thorax gradually widens, until, in *depressum*, the thorax is much broader than long, and the margin almost entirely absent. The epipleural line follows the same rule; almost entirely absent except at apex in the margined species, it becomes more distinct until in *planum* and *depressum* the whole course is marked either by a faint groove in the one and a distinctly elevated line in the other. In all the species except *planum* the lateral margin of the elytra extends to the apex. The humeral angles of the elytra proper (without the margin) are the more distinct as the acute margin is less so, and in *depressum* the rather deep emargination of the elytral base causes them to become quite prominent.

Following these characters our species may be tabulated;

Hind angles of thorax acute and overlapping the humeral angles of elytra.

Body broadly margined.

*muricatum*.

Hind angles of thorax obtuse, not overlapping basal angles of elytra;

body acutely, not broadly, margined.

Thorax sparsely and not coarsely punctured, distinctly margined; not distant from elytra; legs black; abdominal segments on same plane.

Elytral margin attaining apex of elytra.

Broadly oval; males distinctly caudate. contusum.

Elongate oval; elytra gradually narrowed. elongatum.

Elytral margin not attaining the apex.

Males not caudate. planum.

Thorax very coarsely punctured; elytra broadly oval, sub-rugose; legs ferruginous brown; third abdominal segment oblique. depressum.

#### TRIBE XVIII—SCAURINI.

Body elongate, apterous; head prolonged behind the eyes, which are narrow, transverse, reniform and moderately coarsely granulate; front prolonged, concealing the labrum, sides dilated and slightly reflexed; mentum small, distinctly trilobed, lateral lobes inflexed, ligula prominent, gular peduncle distinct; palpi with the last joint dilated; gular peduncle distinct; antennæ eleven-jointed, outer joints rounded, transverse. Elytra feebly embracing the abdomen, with narrow epipleuræ attaining the tip; mesosternum short, side pieces narrow, epimera distinct. Anterior coxæ rounded, middle coxæ with distinct trochantin; hind coxæ distant; scutellum broad, not penetrating between the elytra. Tarsi coarsely spinous beneath.

The scutellum occupies almost entirely the mesonotum. In addition to the very minute punctures, almost entirely hidden in fine pubescence, the antennæ have the outer joints coarsely punctured. This same peculiarity is less distinctly reproduced among the Tenebrionini, between which tribe and Blaptini the Scaurini naturally occupy an intermediate position.

The tribe is divisible into two groups.

Third joint of antennæ long; joints four to eleven gradually diminishing, terminal joint acute. Intercostal process of first abdominal segment broader than long, the segment equal to the second and third; third and fourth segments very short and deeply emarginate. Femora of male toothed, strongly clavate. CERENOPI.

Third joint of antennæ not elongate; joints four to eleven sub-equal; last joint rounded; intercokal process longer than broad; first segment of abdomen not longer than the two succeeding; third and fourth segments feebly emarginate; femora never suddenly clavate and always mutic. EULABES.

#### GROUP I—EULABES.

##### EULABIS, *Esch.*

Eulabis, *Esch.*, Zool. Atl. III, p. 14.

Epantius, *Lec.*, Ann. Lyc. V., p. 144.

Apsena, *Lec.*, Class. Col. N. A., p. 228.

This genus alone constitutes the group, and may be readily recognized by the charac-

ters already given. The mentum as in *Elcodes* varies in form without affording reliable data on which to divide the genus. Our species may be arranged as follows:

- Thorax bicostate, gradually narrowing behind, sides slightly sinuous  
     near the hind angles, margin acute, reflexed. *bicarinata*.  
 Thorax not costate, margin not reflexed, sides regularly rounded.  
     Legs black; species large. *grossa*.  
     Legs ferruginous; species smaller.  
     Elytra finely costate.  
     Thorax as wide at base as base of elytra; elytra not  
     pubescent. *rufipes*.  
     Thorax narrower at base than elytra; elytra pubescent. *pubescens*.  
     Elytra with series of large, distant, shallow punctures, inter-  
     stices not elevated.  
     Thorax narrower at base than elytra; elytra glabrous. *obscura*.

*E. bicarinata*, Esch., Zool. Atl. III, p. 15, pl. 13, fig. 8. Figured also by Solier, Baudie & Truqui Studi. Entom. pl. 11, fig. 1.

Occurs not rarely at San Francisco and Sacramento, California, under stones, etc.  
 Length .30-.40 inch.

*E. grossa*, Lec., New Species, p. 118.

Entirely black, sub-opaque.

Occurs on the Island of San Clemente, coast of California.  
 Length .47-.55 inch.

*E. rufipes*, Esch., Zool. Atl. III, p. 15.

Readily distinguished by the characters given in the table. The humeral angles are more acute than in any species excepting *bicarinata*.

Occurs abundantly at San Francisco and in the San Joaquin Valley.  
 Length .25-.28 inch.

*E. pubescens*, Lec., Ann. Lyc. V., p. 144; (Apsena) Class. Col. N. A., p. 228.

The pubescence of the elytra is very short, erect, and of a yellow color.  
 Occurs at San Diego, San Clemente, and in the Peninsula of California.  
 Length .30-.38 inch.

*E. obscura*, Lec., (Epantius) Ann. Lyc. V., p. 144; (Eulabis) Class. Col. N. A., p. 228.

Differs from the other species in the sculpture of the elytra. The generic characters are of too feeble value to allow the genus to be retained, as stated in Class. Col. N. A., p. 228.

Occurs in the southern part of California.  
 Length .30 inch.

## GROUP II—CERENOPI.

Two genera are very clearly indicated among the species heretofore considered as constituting but one.

External apical angle of anterior tibiæ not prolonged.	ARGOPORIS.
“ “ “ “ “ “ prolonged.	CERENOPUS.

ARGOPORIS, *n. gen.*

The species of this genus differ from those of *Cerenopus*, in having the anterior tibiæ curved and the outer angle rounded. The epistoma is also rounded in front, never emarginate or squarely truncate. The labrum is more prominent. The tibiæ of the males are all denticulate within. The anterior and posterior femora are equally clavate.

Two species in our own fauna and one from Mexico (probably undescribed) constitute this genus, as follows:

Elytra finely sulcate, interstices elevated.

Hind femora ♂ with an acute tooth, with denticulate edges. *sulcipennis*.

Elytra with rows of large punctures, interstices flat.

Legs ferruginous.

Hind femora ♂ with a bifid tooth. *bicolor*.

(Legs black; male not seen. Mexico. *atripes*.)

*A. sulcipennis*, Lec., (*Cerenopus*) Ann. Lyc. V., p. 143.

Differs from *bicolor* in the elytral sculpture and the form of tooth of hind femur of male. The legs are ferruginous. The upper surface of body is rather more opaque than either of the other species, and the thorax more densely and coarsely punctured.

Occurs in Oregon, California and Arizona.

Length .44-.54 inch.

*A. bicolor*, Lec., (*Cerenopus*) Ann. Lyc. V., p. 143.

The thorax of this species is finely and sparsely punctured, and the entire upper surface of body glabrous.

Occurs very abundantly in Arizona. Specimens are also found in Sonora and the Colorado Desert.

Length .42-.58 inch.

CERENOPUS, *Lec.*

*Cerenopus*, Lec., Ann. Lyc. V., p. 143.

The external apical angle of the anterior tibiæ is always prolonged, though rather obtuse at apex, and the tibiæ feebly arcuate. The anterior femora are always very suddenly clavate in the male, the thickened portion being quadrangular in section, and notably



more enlarged than the posterior femora. The anterior tibiæ are alone denticulate on the inner margin. The species have black legs, are three in number, and may be distinguished as follows:

Hind femora ♂ denticulate, one tooth slightly longer.

Epistoma prolonged, excavate beneath. *concolor*.

Hind femora ♂ armed with a long acute tooth.

Elytra with rows of large punctures, interstices flat. *cribratus*.

Elytra with rows of small punctures, interstices alternately more elevated. *costulatus*.

*E. concolor*, Lec., Ann. Lyc. V., p. 143; Thomson, Arcana 1, pl. xii, fig. 3.

The largest species of the genus. It may be known by the armature of the hind femora of the male, the more prolonged and excavated epistoma. The elytra are oval, broader at or behind the middle, and the surface marked with rows of large faintly impressed punctures, of which the interstices are scarcely convex. The outer joints of the antennæ are less transverse than in the following species. The thorax is also more deeply emarginate at base.

Occurs on the borders of the Colorado Desert, and in the northern end of the Peninsula of Lower California.

Length .70-.94 inch.

*C. cribratus*, Lec., Proc. Acad. 1861, p. 337.

With the same general form of the preceding species, this one has the thorax less narrowed behind and less emarginate at base. The elytra are oval, broader in front of the middle. The rows of large punctures are arranged in pairs. Near the apex of the elytra the interspaces between the second and third, and sixth and seventh rows are elevated and confluent, and form on each elytron a very prominent tubercle. The outer joints of the antennæ are more transverse than in *concolor*. The hind femora of the males are armed with a rather long acute tooth, the females are unarmed.

Occurs at the extremity of the Peninsula of Lower California.

Length .50-.70 inch.

*C. costulatus*. Black, sub-opaque; thorax sub-quadrate, slightly longer than broad and somewhat narrower behind; apex truncate, base feebly emarginate, hind angles rectangular; sides rounded in front, straight behind the middle. Elytra elongate oval, wider in front of middle; surface striate, striae with coarse feebly impressed punctures, interstices elevated, sub-acute, alternately larger, the first and third of the larger costae confluent near the apex, forming a slight elevation.

Hind femora of males with an acute tooth.

This species bears a very close relationship to the preceding, though abundantly distinct. The thorax is more quadrate and much more distinctly punctured. The antennæ have the last five joints very transverse, more than twice broader than long.

Two male specimens only were collected by Mr. Wm. M. Gabb, near the centre of the Peninsula of Lower California.

Length .64 inch.

TRIBE XIX—AMPHIDORINI.

Mentum transverse, trapeziform, and sub-trilobed; ligula moderately prominent, small, truncate in front; last joint of palpi oval, last joint of maxillary palpi securiform or triangular. Head short, deeply inserted; eyes not prominent and deeply emarginate by the sides of the front. Epistoma emarginate. Labrum moderately prominent, transverse, basal membrane not visible. Antennæ moderately robust, third joint equalling the two succeeding, joints four to eight obconical, equal, last three joints broader and thicker, the terminal being oval, more or less pointed. Intercoxal process of abdomen usually broad, truncate. Tarsi clothed with long, coarse hairs. Body clothed with erect hairs.

The group of genera forming this tribe has been a source of trouble to all investigators who have undertaken its study, and as many different opinions prevail as attempts made to place it. While the group exhibits undoubted tendencies in its lower forms towards the Helopini, as a whole the affinities toward the Blaptini and Tenebrionini are more evident. The form of head is rather that of *Upis* or even *Eleodes* than *Helops*. The eyes are here very feebly convex and distinctly emarginate anteriorly by a prolongation backward of the sides of the front. In *Helops* the eyes are almost entirely free in front, and the margin of the head directly in front of the eyes very distinctly angulate. Lacordaire indicates affinities in the direction of *Praocis*, but any discussion of this subject beyond the genera of our own fauna is foreign to the objects of the present paper.

Our genera may be distinguished from each other by the following table:

*Epipleuræ* broad.

Outer joints of antennæ sub-globose; first joint of hind tarsi elongate, longer than the second; intercoxal process of abdomen broad truncate; prosternum produced behind the coxæ; hind tibiæ of male with a tooth near apex.

CRATIDUS.

*Epipleuræ* narrow.

Outer joints of antennæ sub-globose; first joint of hind tarsi as long as the two following; intercoxal process broad truncate; prosternum produced; mesosternum prominent.

AMPHIDORA.

Outer joints of antennæ sub-triangular; first joint of hind tarsi longer than the second; intercoxal process narrow, oval at tip; prosternum not produced behind the coxæ; mesosternum not prominent.

STENOTRICHUS.

CRATIDUS, *Lec.*

Cratidus, Lec., Class. Col. N. A., p. 239.

After the characters given defining the tribe, and those above in the table of genera, it is unnecessary to add anything further here.

Two species constitute this genus.

Hind angles of thorax distinct.

*osculans*.

Hind angles of thorax rounded.

*rotundicollis*.

*E. osculans*, Lec., (*Amphidora*) Ann. Lye. V., p. 136; (*Cratidus*) Class. Col. N. A., p. 239; Thomson, Ar-  
cana 1, pl. xii, fig. 4.

The sides of the thorax are strongly rounded, and the hind angles distinct. The elytra are rather densely punctured, with an obscure tendency in larger punctures to form striæ. The hairs are long, yellow, and erect. The sexes do not differ greatly in the shape of the body; the males are, however, slightly narrower and more attenuate behind.

Length .50-.70 inch.

Abundant in California, at and south of Fort Tejon.

*C. rotundicollis*, similar in form to the preceding, but differing in the following particulars:

Sides of thorax strongly rounded from the anterior to the hind margins, hind angles not prominent. Surface of thorax more shining, less densely and coarsely punctured. Elytra with distinct striæ of large punctures, intervals flat, very finely and sparsely punctured. Surface less densely pilose with shorter hairs.

Length .66-.74 inch.

The males here differ more notably in form from the other sex than in the preceding species. The elytra of male are more elongate and are gradually narrowed from a point slightly behind the humeri; their dimensions in length and greatest breadth in the two sexes are as follows: male length .50, breadth .39, female length .44, breadth .33 inch.

The figure given by Lacordaire (Genera, pl. 57, fig. 3), although a rather inferior illustration, will serve to give an idea of the form of the hind angles of the thorax of *C. osculans*, and the two species can at a glance be distinguished by this character as well as by the distinct rows of punctures of the elytra of *rotundicollis*, and the denser and more irregular puncturing of the other species.

For my series of this species I must acknowledge indebtedness to Mr. Gabb, by whom they were collected during an exploration of the Peninsula of Lower California.

AMPHIDORA, *Esch.*

Amphidora, Esch., Zool. Atl. III, p. 9.

This genus may be known at once by the first joint of the hind tarsi being at least as long as the two following united.

Our species are four in number and may be known by the characters of the following table:

Elytra oval, not produced at apex in ♂; hairs shorter.	
Hairs yellow.	<i>littoralis</i> .
Hairs black.	
Elytra densely muricately punctured.	<i>nigropilosa</i> .
Elytra less densely, and simply punctured.	<i>tenebrosa</i> .
Elytra elongate oval, caudate in ♂; hairs longer, yellowish; anterior femur of ♂ armed.	<i>caudata</i> .

*A. littoralis*, Esch., Zool. Atl. IV, p. 13, pl. 18, fig. 6.

This species may be known by its smaller eye and by the yellowish hairs with which it is clothed. The sides of the thorax are strongly rounded from the front to the hind angles, the latter being very obtuse. The thorax is also nearly as broad as the elytra. The sculpture of the elytra consists of rather densely placed coarse punctures, the larger of which are arranged in indistinct striae.

Length .26-.34 inch.

Abundant around the Bay of San Francisco.

*A. nigropilosa*, Lec., Ann. Lyc. V, 136.

A pretty species, resembling, when deprived of its hair, *Eleodes cordata*. The sides of the thorax are very convex, but the hind angles are quite distinct, the surface being rather densely and coarsely punctured. The elytra are very broadly oval, slightly depressed, and sculpture consists of dense muricate punctures without any tendency to their arrangement in striae. The hairs which everywhere rather sparsely clothe the body are black and nearly erect.

Length .36-.48 inch.

Less abundant than the preceding, occurring in southern California, from Tejon to San Diego.

*A. tenebrosa*, black, less shining, and sparsely clothed with black erect hairs. Head rather coarsely and densely but not confluent punctured. Thorax broader than long, coarsely and moderately densely punctured; sides strongly rounded, slightly narrowing behind; hind angles distinct. Elytra elongate oval, regularly convex with striae of large punctures closely placed, of which the interstices are less coarsely and irregularly punctured. Beneath black, shining, coarsely but sparsely punctured.

Length .40-.46 inch.

Easily distinguishable from the preceding species, by its more elongate form and the distinct striae of punctures of the elytra. The thorax is nearly as broad as the elytra, while in the preceding species the elytra are always more broadly oval, depressed above and notably broader than the thorax.

Two specimens collected by Mr. Gabb, in Lower California.



*A. caudata*, black, elongate, clothed with rather long brownish yellow hairs. Head rather coarsely but not densely punctured. Thorax broader than long, narrower at base, convex, coarsely but not sparsely punctured; apex feebly emarginate, angles rounded, base feebly rounded, angles nearly rectangular; sides rounded, in front of middle gradually narrowing to base. Elytra elongate oval, humeri moderately prominent, surface with striae of rather coarse punctures distantly placed; interstices sparsely punctured. Beneath coarsely and sparsely punctured.

*Male*. Elytra caudate, prolongation equal to the last abdominal segment; anterior femora with a small acute tooth between the middle and apex.

*Female*. Elytra more broadly oval, not caudate; femora not toothed.

Length .56 (♂ including cauda)—.48 ♀ inch.

Two specimens from the Maricopa Desert, Arizona.

Easily known by the several characters. The thorax is less punctured along the median line and more densely along the sides. By the characters already given this species might, according to the usually received rules, be separated under a distinct generic name, although here the variation from the type is no greater than that seen among the species of *Eleodes*. The first joint of the hind tarsi does not here exceed the length of the two following.

#### STENOTRICHUS, *Lec.*

*Stenotrichus*, *Lec.*, *Class. Col. N. A.*, p. 239.

*S. rufipes*, *Lec.*, (*Amphidora*) *Ann. Lyc. V.*, p. 136.

This species differs from all our other *Amphidoræ*, by the under surface of the body being pale brownish or ferruginous, with the legs of the same color. The generic differences have already been sufficiently adverted to in the preceding tables.

Length .22-.44 inch.

Collected at San Diego, California.

#### TRIBE XX—TENEBRIONINI.

Mentum moderate or small, frequently trilobed in front, middle lobe sometimes prominent. Ligula in general slightly visible, rarely very prominent. Mandibles bifid at tip. Head somewhat variable in form, always free. Eyes reniform, transverse. Epistoma prominent, more or less rhomboidal. Labrum not prominent. Antennæ usually thicker toward the tip (rarely slender), outer joints frequently perfoliate, third joint longer than the following. Prothorax and elytra contiguous, the former feebly emarginate in front. Scutellum small. Elytra feebly embracing the abdomen. Body winged or not. Tibial spurs very small or scarcely visible. Tarsi pubescent beneath. Middle coxæ with distinct trochantin.

The tribe as above defined includes the *Cœlomotopides* and *Tenebrionides* of Lacordaire, as united by Leconte, as well as *Sitophagus* and several new genera. The vestiture of the tarsi is by no means uniform, and affords a means of dividing the tribe into two

sections. From the Scaurini this tribe may be distinguished by the absence of spines in the vestiture of the tarsi, from the Amphidorini by the rather dense, long, coarse hairs forming the vestiture in that tribe. The Ulomini are nearly all deprived of trochantin to the middle coxæ, the third joint of antennæ usually short, the head deeply inserted in a prothorax more deeply emarginate in front.

The tribe here defined has undoubtedly more complex relationships and affinities than are found in any other tribe. The genus *Polypleurus* points strongly toward the Scaurini, *Tenebrio* towards the Ulomini, *Glyptotus* in the direction of *Helops*, and *Xylopinus* (*ænescens*) toward the Strongyliini. A careful revision of the genera of the world would undoubtedly cause an entire rearrangement of the genera, especially in those of the second sub-tribe, and their apportionment in new tribes.

Two sub-tribes are here recognised.

Tarsi densely clothed with fine, short, silken pubescence.

UPES.

Tarsi rather sparsely clothed with coarse pubescence.

TENEBRIONES.

#### SUB-TRIBE I—UPES.

The species of this group are all of moderate or large size, and are comprised in genera containing but few species. Among the Upes we find genera varying greatly from the type, showing strong affinities toward tribes of lower grades in their general organization. These degradations of structure are the more evident among the last four genera, where the antennæ assume a form closely allied to that of *Helops*, while in two of the genera the anterior tarsi are slightly though very distinctly dilated in the males. The pubescence of the tarsi loses that fine silken or velvet-like appearance and approximates that seen among the species of the second sub-tribe. The mentum varies greatly in all the genera, in some being flat and round, in others trilobed or convex at middle. The epipleuræ are usually abbreviated, in some few genera entire. The metasternum is long or short, in accordance with the presence or absence of wings. The hind coxæ are sometimes widely, usually narrowly, separated by a triangular or oval intercoxal process.

In accordance with the variations of structure thus indicated briefly, our genera may be tabulated as follows:

Antennæ with the outer joints transverse, perfoliate; last joint sub-quadrangle, rounded at tip and larger than the preceding; antennæ shorter than the head and thorax.

Epipleuræ entire.

Epipleuræ not narrower at apex.

POLYPLEURUS.

Epipleuræ gradually narrowing to apex.

Mentum with small lateral inflexed lobes.

NYCTOBATES.

Mentum without lateral lobes.

IPHITHIMUS.

Epipleuræ not attaining the tip of elytra.	
Intercoxal process of abdomen broad, quadrangular, truncate.	COELOCNEMIS.
Intercoxal process oval or acute, narrow.	
Eyes feebly emarginate (broad at middle).	
Femora strongly clavate.	
Mentum prominent at middle.	MERINUS.
Mentum emarginate in front.	PACHYURGUS.
Femora slender.	
Hind tarsi long.	UPIS.
Hind tarsi short.	HAPLANDRUS.
Eyes deeply emarginate (narrow at middle).	
Mentum trilobed, middle lobe prominent and truncate.	SCOTOBENUS.
Mentum flat, rounded in front.	CIBDELIS.
Antennæ slender, longer than head and thorax, outer joints triangular,	
last joint oval, more or less acute.	
Epipleuræ attaining tip of elytra.	GLYPTOTUS.
Epipleuræ not attaining the tip of elytra.	
Anterior tarsi of male not dilated.	RHINANDRUS.
Anterior tarsi of male feebly dilated.	
Anterior margin of front reflexed.	CENTRONOPUS.
Anterior margin of front not reflexed.	XYLOPINUS.

POLYPLEURUS, *Esch.*

*Polypleurus*, Esch., Zool. Atl. IV, p. 11.

The species of this genus are but three in number, and may be easily distinguished.

*P. geminatus*, Sol., Ann. Soc. Entom. France VII, p. 196; pl. 8, fig. 14.

Black and opaque. Elytra with double rows of large deep punctures, the interstices between the double rows not elevated. The hind angles of the prothorax are rectangular and the base feebly sinuate.

Length .42-.50 inch.

Occurs in the southeastern Atlantic States.

*P. perforatus*, Germar, (Upis) In. Spec. Nov., p. 148.

Black and opaque. The elytra are sculptured as in the preceding, the perforations being rather deeper and the interpaces more distinctly costiform. The thorax is more strongly sinuate behind and the angles more acute. The sides of the thorax are also more rounded.

Length .42-.52 inch.

Occurs in the Gulf States.

*P. nitidus*, Lec., New Species, p. 118.

Black, shining. The punctures of the elytra are smaller than in the preceding species. This species is the largest as well as the least convex of the genus.

Length .65–1.02 inch.

Occurs in Florida. Rare in cabinets. The largest specimen I have seen is in the collection of Mr. F. G. Sanborn, of Boston.

#### NYCTOBATES, *Guerin*.

Nyctobates, Guerin, Mag. Zool. Ins. 1834; Melasomes, p. 33.

Notwithstanding the fact, that four species have been until the present recognised in catalogues, it is impossible to define but two.

*N. pensylvanica*, DeGeer, (Tenebrio) Mem. V., p. 52, pl. 13, fig. 10; *chrysops*, Herbst, (Upis) Col. 7, 236; *sublavis*, Beauv., (Tenebrio) Insectes, pl. 31, fig. 4; *inermis*, Mann., Bull. Mosc. 1843, p. 284.

The species of this genus have almost entirely the form of *Upis*, but may be readily known by the epipleuræ extending entirely to the apex of the elytra, although becoming very narrow.

In the above synonymical list I have united our common eastern species and that from California. There are absolutely no differences between them that cannot be shown to be merely individual variations. The mentum in both has the disc or central portion rhomboidal, broader in front and slightly emarginate. The anterior angles, though rounded, are distinct. The surface is coarsely punctured. The thorax is usually nearly square or slightly narrowing in front. The elytra have faint striæ of fine punctures.

Length .80–.90 inch.

Occurs in every region of our country between the Atlantic and Pacific, from the Northern and Middle States westward to California, where it occurs more abundantly in moderately elevated regions, or where the climate is not hot.

*N. barbata*, Knoch, (Tenebrio) N. Beitrag. 166, tab. 7, fig. 1; *glabra*, Herbst., (Upis) Col. 8, 32, tab. 119, fig. 8; *intermedia*, Hald., Stansb. Exped. 376.

This species differs from the preceding in having the under surface of the mentum rather densely clothed with hair. The disc of the mentum is also more rounded, and the anterior angles are very obtuse and rounded. The thorax is usually broader than long, always broader than the preceding species, and the sides in front more strongly rounded. The punctured striæ of the elytra are also more defined, and their surfaces smoother and at times glabrous or shining. The specimen called *intermedia* by Haldeman, differs only in having the elytral punctures much less defined.

Length .66–.80 inch.

This species occurs more especially in the Southern and Gulf States, where it is not rare; it is very rarely met with in the Northern States.



IPHITHIMUS, *Truqui*.

*Ipithimus*, Truqui, Stettin Ent. Zeitschrift 1857, p. 92.

The species of this genus are more depressed than those of any other in the sub-tribe excepting *Scotobæus*. From our other genera with entire epipleuræ this may be easily distinguished (from *Polypleurus*) by the epipleura becoming very narrow behind, and (from *Nyctobates*) by the thorax narrowing behind and becoming crenulate on the sides. The mentum has no lateral lobes.

Two species are found in our fauna, one from New England and Canada, the other Western, ranging from New Mexico to Oregon and northern California.

*I. opacus*, Lec., New Species, 121.

Differs from the following in its smaller size, more robust form, as well as by its entire absence of any lustre and by its very rugose sculpture. The thorax and head are very coarsely and confluent punctured. The former is less narrowed behind than in the next species, the sides less rounded and more strongly crenulate. The anterior angles are also more prominent. The elytral sculpture consists of deep striæ frequently interrupted, forming thus series of short dashes, of which the interspaces are convex.

Length .60–.80 inch.

Occurs not uncommonly in New England and Canada.

*I. serratus*, Munn., (*Nyctobates*) Bull. Mosc. 1843, p. 234. Lec., Pacif. R. R. Rep. IX, App. 1, pl. 2, fig. 5. Lacord. (*Ipithinus*) Genera, Vol. V., p. 371, note.

This species is larger than the preceding, and differs in the characters given above, and while these are apparently of but small moment, the appearances of the two species are so different that one cannot be mistaken for the other. This species is distributed over a large region of country, and suffers some variation in each, so that three types or races may be distinguished as follows:

*serratus*, Lec.

This is the more opaque and rugose form. The head and thorax are both coarsely and densely but not confluent punctured. The elytra are sculptured with series of interrupted striæ, of which the interstices are flat and densely punctured. This form occurs abundantly in Oregon and British Columbia. The forms described as *Ipithinus servilis*, *servator*, and *subligatus* by Walker, in "The Naturalist in British Columbia," Vol. II, pp. 326 and 327, are probably merely individual variations of this one form.

Length .68–.96 inch.

*sublaevis*, Lec., List, (*Nyctobates*) Bland, Proc. Ent. Soc.

Differs from the preceding in its smoother sculpture. The head and thorax are moderately smooth, being rather finely and sparsely punctured. The elytra are sculptured

with striæ of punctures, with flat interstices finely and very sparsely punctured. The under surface of the body is smoother and more shining.

Length .80-.96 inch.

The type specimens were from Colorado, others have since been found along the Sierras of California.

*Lewisii*, Horn.

In this form the whole surface is still more shining than in the preceding two. The striæ of the elytra are scarcely interrupted, the interstices convex, impunctured and finely transversely wrinkled.

Length .80-.96 inch.

Collected rather abundantly by Dr. Lewis, in the region of the Raton Mountains of eastern New Mexico.

#### COELOCNEMIS, *Mann.*

*Coelocnemis*, Mann., Bull. Mosc. 1843, p. 280.

The mentum is here broader than long, supported on a short, rather broad gular peduncle, rounded on the sides, slightly emarginate in front and with the margins not inflexed. The sculpture of its surface varies. The tibiae of the male are apparently slightly thickened in their lower half, somewhat flattened on the inner face, with line of fine pubescence on each edge extending half way up, so that the tibia appears grooved on the inner face. The intercoxal process of the abdomen is very broad and truncate at tip. The first joint of the hind tarsi equals the second and third together, and very nearly equals the last joint. The tibial spurs are here very short. The elytra are connate and the body is apterous.

The species of this genus resemble *Eleodes* very closely in form, but may be at once known by the tarsal vestiture and by the elytra feebly embracing the abdomen. The under surface of the head of all the species is very rugose, by the confluence of rather deep coarse punctures. All are shining, black. They are found rather abundantly in California, Oregon and Nevada, under stones or fallen bark, and are rarely found walking in daylight, except when the day is dark and cloudy. They may then be found feeding on growing plants, principally *Saxifragæ*.

Our four species may be distinguished as follows:

Thorax broader than long; strongly rounded or sub-angulate at the sides.

Elytra broader behind the middle, suddenly declivous behind; thorax

narrower at base than long, always sub-angulate on the sides,

which are rounded anteriorly, sinuate posteriorly.

*dilatocollis*

Elytra broadly oval, broader in front of middle; gradually declivous behind; thorax as broad at base as long, sides sub-angulate, anteriorly rounded, posteriorly feebly sinuous or gradually converging. o b e s a .

Elytra elongate oval, more prolonged at apex; thorax as broad at base as long, never sub-angulate on the sides, which are regularly rounded from apex to base. m a g n a .

Thorax longer than broad, sides feebly rounded.

Elytra elongate oval, sides more nearly parallel; rather suddenly declivous behind. p u n c t a t a .

*C. dilaticollis*, Mann., Bull. Mosc. 1843, p. 280; *californica*, Mann., loc. cit.: redescribed and the latter figured in Mag. Zool. 1844, pl. 133.

The differences mentioned by Mannerheim between these two species seem not to warrant their being retained as distinct. The sculpture of the elytra is subject to variation, as will be seen, and the presence or absence of one stria may be owing to accidental obliteration rather than a permanent absence from specific causes. The peculiar sculpture of mentum given of *californica* is also that of *dilaticollis*, and while each species has a sculpture peculiar to itself, the differences are so slight as not to warrant any mention in the synoptic table already given. The characters given will suffice to distinguish this species from any which follows. The surface sculpture varies greatly. The Oregon specimens have the thorax sub-opaque, and densely finely punctured; the elytra are also sub-opaque, still more densely punctured and finely rugose. From this, gradual variations may be noted until the surface is smooth and shining, with rows (more or less distinct) of small distant punctures.

Length .66–1.06 inch.

Abundant in Oregon and California north of San Francisco.

*C. obesa*, Lec., Ann. Lye. V., 150.

The thorax is similar in outline to the preceding species, being, however, broader behind and more convex above. The elytra are also more pointed behind and are gradually declivous from the scutellum to the apex.

Length .90–1.12 inch.

This is the species of southern California and the Peninsula of Lower California.

*C. magna*, Lec., Ann. Lye. V., 150.

The sides of the thorax are in this species rounded and not sub-angulate, as in the two preceding species, and the surface is more convex. The elytra are more elongate and pointed behind. In form it resembles *Eleodes gigantea*.

Length .90–1.18 inch.

Abundant in California from San Francisco southward in the Sacramento and Tulare Valleys, also at Fort Tejon.

*C. punctata*, Lec., Proc. Acad. VII, 225.

Differs in the proportions of the thorax. The elytra are also broader in proportion to their length, and less rounded on the sides, and rather suddenly declivous behind. This species was described from an unique specimen from an unknown locality. Since that time three others were collected by Mr. Wm. M. Gabb, which I refer to the same species, although differing from the type as well as from each other, very slightly however, in form, but considerably in sculpture.

The typical specimen is rather densely but finely punctured on the thorax as well as elytra. There is a faint indication of an arrangement of larger punctures in indistinct striae.

A specimen in my own cabinet is smooth, almost entirely impunctured. The elytra exhibit very distinct striae of large punctures, faintly impressed, becoming obsolete on the sides and apex.

Another specimen has the fine punctation quite evident. The elytra are less feebly striate, the striae punctured and the interstices feebly convex and finely wrinkled.

The fourth specimen reproduces the dense puncturing of the type, but the elytra are deeply striate, the interstices convex. The striae are coarsely and the interstices densely and finely punctured and feebly transversely wrinkled. The under surface is more evidently punctured than the two preceding species, less, however, than in the typical form.

Notwithstanding these variations of sculpture, these four specimens are considered as representatives of but one species, similar variations occurring in *Eleodes* and *Iphthimus* to such an extent as to render it almost impossible to define varieties.

Length .80 (type)—1.10 (2nd specimen) inch.

This species occurs in Utah and Nevada.

The species of this genus appear to be confined, each within its own limits, as follows:

*dilaticollis*, Oregon and northern California, in and to the westward of the Coast Range, southward to the Bay of San Francisco.

*magna*, central California and the great valley of the Sacramento River and Tulare Lake, between the Sierras and Coast Range.

*obesa*, Peninsula of California and that portion of upper California southwest of the Coast Range, forming part of the fauna of Arizona.

*punctata*, the deserts of Nevada and western Utah, and southward to New Mexico.

*MERINUS*, Lec.

*Merinus*, Lec., Class. Col. N. Amer., p. 230.

In this genus the middle lobe of the mentum is rather small, the lateral lobes or alae



well developed. The middle lobe is also prominent along the middle and in front, the lateral lobes with acute angles. The epipleuræ extend beyond the last ventral suture. The hind coxæ though rather widely separated, have the intercoxal process oval, rounded in front. The males have the tibiæ more strongly arcuate than the other sex, the hinder tibiæ being armed near the tip with an acute tooth. The femora in both sexes are strongly clavate and slightly flattened. The only species known is winged.

*M. levis*, Oliv., (*Tenebrio*) Ent. 3, 10. (*Merinus*) Lec., loc. cit., p. 231.

A large, elongate, sub-opaque, black insect, found not uncommonly under bark in the Eastern and Middle States, and more rarely in Canada. Easily known by its clavate femora and the peculiar armature of the hinder tibiæ of male.

Length .70–1.04 inch.

#### PACHYURGUS, *Lec.*

*Pachyurgus*, Lec., Class. Col. N. Amer., p. 230.

Differs from the preceding genus, in the mentum being nearly flat in the middle and emarginate in front, with acute angles. The femora are also clavate. The only specimen known to me is a female; the males may have the posterior tibiæ armed in *Merinus*. It is doubtful whether these two genera should be retained as distinct. The genera of *Tenebrionini* differ generally so slightly from each other that these may be retained as distinct until the male shall become known to us.

*P. arcus*, Mels., (*Iphthimus*) Proc. Acad. 3, 65. Lec., (*Pachyurgus*) loc. cit., p. 231.

This species is similar in form to *M. levis*. It has a metallic bronzed, shining surface. The elytra have striæ with fine punctures, becoming rather less evident on the sides and at the apex.

Length .62 inch.

The specimen in the cabinet of Dr. Leconte is the type of Melsheimer, and the only one known. It is probable with this, as has already been discovered with other species, that the insect is a foreign (South American?) form introduced by mistake, and described as North American.

#### UPIS, *Fabr.*

*Upis*, Fabr., Ent. Syst. II, p. 75.

In this genus the mentum is oval, prominent in front, with a median longitudinal elevation and a groove on each side. The femora, though thickened, are not so suddenly nor so strongly clavate as in the two preceding genera. The epipleuræ are not complete behind, though reaching beyond the last ventral suture.

*U. ceramoides*, Linn., (*Attelabus*) Syst. Nat. II, p. 621. Fabr., (*Upis*) loc. cit. *reticulata*, Say, Long's Exped. 2, 279.

This species common in Europe, is also found abundantly in the northern portion of our own Continent, occurring as far south as Canada.

Length .54–.75 inch.

HAPLANDRUS, *Lec.*

Haplandrus, *Lec.*, *Class. Col. N. A.*, p. 230; *New Species*, p. 121.

In this genus the mentum is trapezoidal, narrower behind, convex along the median line, truncate in front, with the angles prominent or rounded; inserted upon a narrow peduncle. The prosternum is slightly prolonged in all the species, the mesosternum concave, receiving the prosternum. The epipleuræ extend beyond the last ventral suture, but not to the tip of the elytra. The femora are slender and the tarsi short. The head is always more strongly deflexed than in any of the other genera of the sub-tribe.

The species resemble each other closely in outline, differing in the form of the mentum and front. All are winged. They may be known by the following characters:

Third joint of antennæ longer than fourth, twice as long as second.

Femora rufous, tibiæ black; surface opaque.

*femoratus*.

Legs entirely black; surface shining.

*ater*.

Third joint of antennæ short.

Legs black; surface opaque.

*concolor*.

*H. femoratus*, *Fab.*, (*Trogosita*) *Syst. El.* 1, 154; (*Tenebrio*) *Beauv. Ins.*, p. 163, tab. 31, fig. 5; *fulvipes*, *Hbst.*, (*Upis*) *Col.* 7, 238.

In this species the mentum has the anterior angles prominent. The front is hemihexagonal, with the angles rounded. The eyes are scarcely emarginate by the sides of the front, and are rather more prominent than in the two succeeding species. The thorax is nearly square, slightly emarginate in front with prominent angles, sides nearly parallel, base strongly bisinuate with prominent angles. The lateral margin is acute, but not compressed. The elytra are opaque, with eight entire rows of elongate deeply impressed punctures, and one short scutellar row.

Length .30-.44 inch.

Occurs abundantly in the Middle and Eastern States, under bark, etc.

*H. ater*, *Lec.*, (*Metaclisa*) *New Species*, p. 127.

The reference of this species to the present genus is made not without some misgivings that it should in all probability constitute a new one. It cannot in my opinion remain associated with *Metaclisa*, in which the hind tarsi are rather long and slender and the body depressed, while in this the form is robust. It differs from the other species of the present genus, in having the mentum rather more convex along the median line and the middle lobe more prominent. The lateral lobes are also more prominent, and the mentum thus resembles that of *Metaclisa*. The front is also more broadly rounded. The mesosternum is more prominent, more deeply emarginate, and the angles very prominent and acute. The hind tarsi are short, the first joint scarcely equalling the second and third together, while the last joint is equal to the first three. As in the other species, the

head is deflexed and the front nearly vertical. The thorax is feebly emarginate in front and the eyes entirely free. The elytra are rather deeply eight striate, the striae punctured, the interstices convex and very finely punctured. The under surface is smooth, being finely punctured. The legs are dark brown or black.

Length .30-.35 inch.

Occurs not rarely in the extreme Southern States. Numerous specimens collected in Florida were given me by Mr. Levi Taylor.

*H. concolor*, Lec., New Species, p. 121.

This species is similar in form to *femoratus*, differing by the greater width of thorax, deeper elytral striae, and black legs. The third joint of the antennæ is scarcely longer than the fourth, and the outer joints are broader than in either of the preceding species. The mentum is here somewhat different in form from either of the others, being broader than long, rounded on the sides, the lateral lobes not distinct. The middle is slightly elevated, with a groove on each side. This form appears to be an intermediate one between the trapezoidal mentum of *femoratus* and the distinctly trilobed one of *ater*. The short third antennal joint exists in the three specimens before me.

Length .34-.36 inch.

This insect occurs, very rarely however, in Canada and the Lake Michigan region.

#### SCOTOBLEXUS, Lec.

*Scotobænus*, Lec., Proc. Acad. 1859, p. 88.

The species of this genus is somewhat similar in form to *Iphthimus*, being, however, more depressed. The mentum is distinctly trilobed. The middle lobe prominent in front, convex along the middle, with a groove on each side, lateral lobes rather small, inflexed and with the angles acute. The gular peduncle moderate. The front is hemi-hexagonal, with the suture of the epistoma rather strongly impressed. Thorax emarginate in front and at base, with the hind angles acute and moderately prominent. The epipleuræ are not entire. The femora are slightly clavate and compressed.

*S. parallelus*, Lec., Proc. Acad. 1859, p. 88.

Black, sub-opaque. Thorax broader than long, narrower behind. Elytra truncate at base, humeri prominent. Sculpture consists of rather coarse punctures, the interstices being more finely and densely punctured, as in *Iphthimus serratus*. The general form is similar to the species indicated, but the sides are nearly parallel.

Length .74-.82 inch.

From the region of the western base of the Sierra Nevada Mts. of California, from Sacramento to Visalia. Not common.

CIBDELIS, *Mann.*

*Cibdelis*, Mann., Beitrag. 284.

The mentum is trapezoidal, narrower behind, strongly (*blaschkii*) or feebly (*bachei*) rounded in front, convex at middle, with a faint groove on each side, supported by a gular peduncle. Head rounded in front, truncate (*blaschkii*) or emarginate (*bachei*) at middle of epistoma. Thorax truncate in front, rounded behind, hind angles distinct, not prominent, anterior angles obtuse. The metasternum is short and the body apterous. The mandibles of both species are very feebly emarginate.

Two species from California are known.

*C. blaschkii*, Mann., Beitr. 284.

The thorax is densely and rather coarsely punctured. The elytra have faint striæ of punctures, and small rounded tubercles placed in more or less regular rows. This species is more convex and elongate than the next, and differs also in the form of the front and the greater prominence of the front of the mentum.

Length .52-.56 inch.

Occurs from San Francisco southward, under bark and stones.

*C. bachei*, Lec., Proc. Acad. 1861, p. 353.

The thorax is here granulose, less convex and proportionately broader than *blaschkii*. The thorax and elytra are also more opaque, and the tubercles of the latter rather smaller and more closely and regularly placed. The elytra are rather more depressed and more broadly oval than the preceding species, and differs also in the characters mentioned above.

Length .56 inch.

Occurs only at Santa Barbara and on the Island of San Clemente.

GLYPTOTUS, *Lec.*

*Glyptotus*, Lec., Proc. Acad. IX, p. 75.

With this genus commences a series of genera in which the antennæ are longer than the head and thorax, the outer joints not being transverse but more or less triangular and closely articulated. This form is somewhat similar to that seen in many *Helopides*, and it may be considered doubtful whether these genera (excepting *Rhinandrus*) should not enter that tribe or form a new one closely allied to it. The vestiture of the tarsi of these genera, with the exception noted, is intermediate between the previous group of genera and the *Tenebriones* which follow. In two genera the males have the anterior tarsi slightly dilated.

The mentum of *Glyptotus* is small, rhomboidal, narrowing behind, very prominent at middle, and with prominent angles; supported on a very narrow gular peduncle. The eyes are larger on the front than other of our genera. On each side of the head above



the eyes is a deep groove, extending from the anterior margin of the eyes backward, then down upon the side of the head at some distance behind the eyes, losing itself gradually as it approaches the gula. The antennæ are rather long, equalling the head and thorax. The outer joints are sub-quadrate, not transverse nor sub-perfoliate, the terminal joint being longer than the preceding and obtuse at tip, as in *Polypleurus*. The epipleuræ are entire.

The appearance of this insect is that of *Helops*, especially in the form of the head.

*G. cribratus*, Lec., Proc. Acad. IX, p. 75.

Black, moderately shining. Thorax broader than long, sides rounded in front, very feebly narrowed behind, hind angles rectangular, base feebly bisinuate. Elytra twice longer than broad, sub-parallel, moderately convex, with eight rows of rather large punctures feebly impressed. The body is winged.

Length .58 inch.

Rare in Texas.

Another species is in the Zimmerman cabinet, from Guinea.

#### RHINANDRUS, *Lec.*

*Rhinandrus*, Lec., New Species, p. 119.

The differences between this genus and *Zophobas* are slight, and a study of the Mexican species may render it probable that these points may have merely specific value.

*R. gracilis*, Lec., New Species, p. 120.

Length .72-.75 inch.

From Cape St. Lucas, Lower California.

#### CENTRONOPUS, *Solier.*

*Centronopus*, Sol., Baudi e Truqui Studi Entom., p. 258.

The antennæ of this genus are longer than the head and thorax, the outer joints triangular, the last oval and pointed. The epipleuræ do not reach the apex of the elytra. The anterior tarsi of the males are feebly dilated or thickened. The anterior tibiæ of the same sex are armed near the middle with a short tooth, and the tips of these and the middle tibiæ are thickened. The metasternum is long and the body winged. Mentum small, rhomboidal, narrower behind, middle prominent, angles acute. The anterior margin of front is thickened and slightly reflexed.

*C. calcaratus*, Fab., (*Helops*) Syst. El. 1, 159. *coracinus*, Knoch, (*Tenebrio*) Beitr., 172; *reflexus*, Say, Teneb.) Journ. Acad. V., p. 103.

This rather abundant insect may be known by the peculiar thickening of the anterior margin of the front, as well as by the sexual characters of the male. The thorax is some-

what broader than long, feebly emarginate in front and at base, sides feebly rounded and slightly margined, anterior angles obtuse, hind angles nearly rectangular. The surface is coarsely but not densely punctured. The elytra are elongate sub-parallel, moderately convex, with eight entire and a short scutellar striæ. The striæ are punctured, interstices slightly convex and very feebly punctured. The legs are black and the under surface nearly smooth. In addition to the generic characters given above, it may be stated that the males have the under surface of the anterior femora near the base clothed with rather coarse hairs.

Rather common in the Atlantic region, under fallen logs or stones.

*C. opacus*, Lec., Smithson. Cont. 4to, Col., Kansas and New Mexico, p. 15.

The entire surface is opaque in this species, while in the preceding the surface is shining and of a sub-metallic lustre. The elytra are not striate, but have rows of fine, closely placed punctures, the intervals being flat and impunctured. The general form is similar to *calcaratus*, with the elytra less parallel. The thorax is much less distinctly margined, and the under surface less shining. The sexual characters are similar in both species.

Length .67 inch.

A single specimen from the Black Hills, Dacotah, is known.

#### XYLOPINUS, Lec.

*Xylopinus*, Lec., Col. N. Am., 231.

This genus differs from the preceding notably in the form of the front. The anterior margin is truncate or feebly emarginate, not thickened. The labrum is also more prominent and is occasionally so protruded as to allow the basal membrane to become visible. The males have the same sexual characters in the front tibiæ as in *Centronopus*. The anterior femora have not the basal hairy spot, nor are the middle tibiæ thickened at tip. The front and middle tarsi are more distinctly dilated, and the whole appearance more decidedly like the *Helopides*. All the specimens are winged.

Our species may be distinguished as follows:

Body black, not metallic.

Legs black.

Legs red.

Body sub-metallic.

*saperdoides*.

*rufipes*.

*anescens*.

*X. saperdoides*, Oliv., (Tenebrio) Ent. 3, 11. *saperdoides* et *calcaratus*, (Helops) Beauv. Ins., 162, pl. 31, fig. 2; *spinipes*, Fab., El. 1, 162; *anthracinus*, Knoch, (Tenebrio) Neue. Beitrag., p. 169.

The thorax of this species is nearly square, feebly emarginate in front, truncate behind, sides very feebly rounded, anterior angles rounded, hind angles acute with a slight impression within. The elytra are elongate, parallel, feebly convex, usually somewhat flat-

tened on the disc. The elytra are striate, the striæ punctured. The interstices are moderately convex and finely punctured. The legs are black and the under surface of the body smooth.

Length .44-.64 inch.

Common in nearly the entire region east of the Mississippi River, under loose bark.

*X. rufipes*, Say, (Tenebrio) Journ. Acad. V., 203.

Scarcely different from the preceding. The legs are red except the bases of the tibiae. It does not differ in size and sculpture from the preceding, and though common, is less so than *superdoides*, and occurs in the same region.

*X. senescens*, Lec., X. Species, p. 120.

Differs from the preceding two species, by its broader thorax and by the elytra being more dilated behind the middle. The color is pale brown, with a brassy tinge. The legs are slender, and the tooth of the anterior tibia of the male is less prominent and the emargination below it less deep.

Length .50-.57 inch.

Middle and Western States, not common, though more abundant in the latter region.

#### SUB-TRIBE II—TENEBRIONES.

In this group the tarsi are clothed with a coarser, less dense, and more rigid pubescence than in the preceding. The body is always elongate, never robust, usually depressed. The mentum is trapezoidal, generally flattened. The tibial spurs are always conspicuous. The epipleuræ are variable in length.

Our genera are as follows:

Antennæ gradually thicker toward the tip, palpi and tarsi short.

Epipleuræ entire.

TENEBRIO.

Epipleuræ abbreviated.

Head sub-quadrate; similar in the sexes.

BIUS.

Head transverse; dissimilar in the sexes.

SITOPHAGUS.

Antennæ elongate, slender, last joint fusiform; palpi long; tarsi slender.

Epipleuræ entire.

Mentum emarginate in front.

ALEPHUS.

Mentum truncate in front.

EUPSOPHUS.

The genera of this sub-tribe are much less homogeneous than the Upes, although fewer in number, and this dissimilarity seems to indicate that, by the division of the Tenebrionidæ and their apportionment in tribes by the discovery of better characters than those now known, these genera would not be found associated. The genus *Sitophagus* has been placed here (as done by Mulsant), the form of the anterior coxæ indicating but little affinity with the genera allied to *Uloma*.

TENEBRIO, *Linn.*

*Tenebrio*, Linn., Syst. Nat. Ed. VI; *Neatus*, Lec., Col. N. A., p. 233.

The characters of this genus are too well known to need special comment.

Our species are four in number, and may be distinguished as follows:

Trochantin of middle coxæ very distinct.

Surface dull, opaque. *obscurus.*

Surface more or less shining.

Thorax broader than long. *molitor.*

Thorax sub-quadrate. *castaneus.*

Trochantin of middle coxæ small. *tenebrioides.*

*T. obscurus*, Fab. El. 1, 146.

Easily distinguished from our other species by its opaque surface.

Length .58-.62 inch.

Abundant in the Atlantic region, where it has been introduced from Europe.

*T. molitor*, Linn., Fab. El. 1, 145.

Similar in form to the preceding. The thorax is, however, more transverse and the margin broader and more distinctly reflexed.

Length .50-.65 inch.

Abundant in the same regions with *obscurus*. Also introduced.

*T. castaneus*, Knoch, Neue Beitr., 171; *interstitialis*, Say, J. Ac. 3, 266.

Differs notably in form and sculpture from the preceding species. The thorax is here nearly square, truncate at base, and more distinctly emarginate in front. The sides are more broadly margined and the margin more reflexed. The surface is more coarsely punctured. The elytra are narrower and more elongate, their surface more deeply striate and the striæ more strongly punctured.

Length .40 inch.

Specimens have been found in every region of our country, though not abundant.

*T. tenebrioides*, Beauv. (Helops) Ins., p. 121, pl. 30, fig. 1; *badius*, Say, (Tenebrio) Journ. Acad. 3, 256.

Similar in form to *molitor*. The trochantin of the middle coxæ is very small, and in some specimens scarcely visible. Length .48-.52 inch.

Abundant over our whole territory; specimens have occurred in California.

BIUS, *Muls.*

*Bius*, Muls., Col. France; Latigenes, p. 266.

*B. estriatus*, Lec., (Tenebrio) Ann. Lyc. 5, 149.

Similar in form to the European *thoracicus*, but shorter, and with a more distinctly margined thorax, with less prominent hind angles. Length .22 inch.

Rare. Specimens have been found in California, and at Fort Simpson, Brit. Amer.



SITOPHAGUS, *Muls.*

Sitophagus, Muls., Col. France; Latigenes, p. 264.

Easily known from our other genera by its depressed form, being almost perfectly flat above. The epipleuræ are abbreviated. The antennæ, though gradually thickening toward the tip, are less compact than in *Bius*, in which also the epipleuræ do not attain the tip of the elytra. The sexes differ from each other by the presence of horns on the male, formed by the sides of the genæ and the sides of the epistoma.

Two species are known in our fauna.

*S. pallidus*, Say, (Pytho) Journ. Acad. 3, p. 271; Lec., (Adelina) Ann. Lyc. 5, 149; *complanata*, Dej. Cat.

This is the larger of our two species, and has the side of the head in front of the eyes prolonged into a horn on each side of the head of the male.

Length .20 inch.

Rare in the Middle and Southern States.

*S. lecontei*, Horn; *planus* || Lec., (Adelina) Ann. Lyc. V., 149.

Differs from the preceding in size and by the head of the male having a second horn on each side, concealed from above by the larger horn formed by the prominence of the sides of the front.

Length .18 inch.

Occurs rather abundantly in the Colorado Desert of California, in Owens' Valley, and in Arizona.

ALLEPHIUS, *n. g.*

Mentum trapezoidal, narrowed toward base, emarginate in front, anterior angles prominent; ligula free, basal membrane visible; gular peduncle short, narrow. Maxillary palpi long, second joint longer than third or fourth, slender at base, thickened toward tip, last joint longer than the preceding, conical, flattened and obliquely truncate. Head strongly exsert, very slightly narrower behind the eyes, which are distant from the prothorax, reniform and not prominent. Head prolonged in front of eyes, frontal suture indistinct. Epistoma hemi-hexagonal, emarginate in front, almost entirely concealing the labrum. Lateral margins of front slightly reflexed. Antennæ as long as head and thorax, slender; first joint thicker, second small, third long, equal the two following; joints four to eleven subequal, last joint fusiform. Prosternum not prominent behind the coxæ, mesosternum oblique, middle coxæ with distinct trochantin. Metasternal parapleuræ simple, moderate, slightly narrower behind. Metasternum long, body winged. Intercostal process of abdomen acute. Epipleuræ entire. Tibial spurs distinct; tarsi slender; the first joint of hind tarsi longer than the two succeeding together. Scutellum broader than long, sub-quadrate.

The male has the anterior tarsi very slightly dilated, and a slight brush of hairs near the tip of the penultimate abdominal segment.

This genus is proposed for an insect to which I have seen nothing similar. The head recalls the form seen in *Cerenopus* and other *Scaurini*, though differing from them in the tarsal vestiture, the form of the antennæ, and the distribution of the antennal pores.

*A. pallidus*, pale brownish testaceous, sub-opaque, elongate oval. Head moderately but not coarsely punctured. Thorax broader than long, narrower in front, apex feebly emarginate, base feebly bisinuate, sides moderately

rounded, margined, margin slightly reflexed, hind angles distinct, disc moderately convex. Elytra elongate oval, slightly emarginate at base, humeri distinct, elytral margin distinct, slightly reflexed. Surface finely and sparsely punctured.

The head and thorax are much more opaque than the elytra. The thorax is narrower than the elytra, and has a slight median depression near the base. The sides of the elytra are very feebly rounded and are almost sub-parallel, the apex is not prolonged. The upper surface of the body is feebly convex, the under surface paler in color and more shining.

Length .33 inch.

One male, from Fort Tejon, California.

#### EUPSOPHUS, *n. g.*

Mentum flat, transverse, slightly narrower behind, anterior angles not prominent, anterior margin truncate, supported on a very short broad gular peduncle. Ligula transverse, slightly emarginate in front, basal membrane not visible, palpi short, last joint flattened, conical, longer than the preceding. Maxillary palpi long, last three joints sub-equal, conical, the terminal slightly flattened. Labrum transverse, partly concealed. Head elongate, eyes broad, feebly emarginate and distant from the thorax. Front hemi-hexagonal, feebly converging in front, anteriorly broadly emarginate, suture indistinct. Antennæ longer than the head and thorax, slender; first two joints short, third longer, scarcely equalling the third and fourth together, joints four to ten gradually decreasing, last joint longer and pointed at tip. Scutellum oval. Elytra broader at base than the thorax, humeri distinct. Epipleuræ entire, narrow and horizontal. Trochantin of middle coxæ distinct. Metasternum long, body winged, intercoxal process of abdomen triangular. Legs slender, tarsi long, sparsely clothed with short spinous hairs. First joint of hind tarsi longer than the second and third, last joint nearly equal to the two preceding. Tibial spurs distinct.

This genus has proved the most troublesome of any of the genera to which I have been required to assign a place.

The hind margins of the third and fourth ventral segments do not exhibit in so marked a degree the coriaceous margin, which has been taken as the character dividing the family into two sections, and it is only with some difficulty, or by the undue protrusion of the terminal segments, that the membrane connecting them becomes visible. In outline the insect resembles some species of *Himatismus*, or our own *Epitragus submetallicus*, Lec. There are, however, no other affinities between this insect and the Epitragini, as will be seen by the smaller mentum, the middle trochantin and the form of the head. The prosternum is deflexed behind, and the mesosternum oblique. This genus and the preceding, in an arrangement of the genera at large, should in all probability constitute a tribe by themselves, near the *Goniaderides* of South America, though abundantly distinct by many characters. From *Alæphus* this genus may be known by the form of mentum and gular peduncle, by the margins of the front not being reflexed and by the form of the antennæ.

*E. castaneus*, castaneous, moderately shining, head rather densely punctured in front of eyes, sparsely on the vertex. Thorax sub-quadrate, moderately convex, slightly broader than long, truncate in front, feebly rounded at base, sides feebly rounded anteriorly, very slightly sinuous behind, hind angles rectangular. Surface sparsely punctured. Elytra elongate oval, more than twice longer than broad, moderately convex, sparsely punctured and faintly rugose near the base. Beneath castaneous, shining, very sparsely and finely punctured.

Length .54-.60 inch.

The male is smaller and more slender than the female. The outline of this species is almost exactly that of *Himatismus occidentalis*, as figured by Lacordaire (Genera, pl. 49, fig. 1.) excepting that this insect has the thorax shorter, with the anterior angles rounded.

This insect occurs rather abundantly in Owens' Valley, California, flies at night, and is attracted by candle light. When recent it is somewhat paler in color.

#### TRIBE XXI—PEDININI.

This tribe differs from those which precede, in having the front very short and broadly dilated on the sides. The body is usually short, oval, not very convex, epistoma emarginate, sometimes very deeply, allowing the basal membrane to become visible; labrum prominent; mentum small, frequently trilobed in front, with a distinct gular peduncle; middle coxæ with distinct trochantin; anterior tarsi of male dilated and spongy beneath, hind tarsi either pubescent or spinous.

The anterior coxæ are more transverse than in the preceding tribes and tend toward the sub-cylindrical form so strongly marked in most of the genera of the Ulomini. The head is usually deeply inserted, and the terminal joints of both pairs of palpi either triangular or securiform.

Our genera form two groups:

Eyes not entirely divided.

PLATYNOTI.

Eyes completely divided.

BLAPSTINI.

One species, described by Say as *Pedinus suturalis*, remains unknown and cannot be assigned a place. It may possibly be a larger species of *Blapstinus* or *Opatrinus*.

#### GROUP I—PLATYNOTI.

One genus alone in our fauna constitutes our representation of this group. From our other genera it may be easily known, by the eyes not being divided and the anterior tibiæ slender and not notably different in the sexes.

#### OPATRINUS, Latr.

Regne Animal, ed. 2, V. p. 19.

*O. notus*, Say, (Opatrum) Journ. Acad. 5, 237; Bost. Journ. 1, 187. Lec., (Opatrinus) Say's Ent. II, 304; *Tenebrio minimus*, Beauv. Ins. 163, pl. 31, fig. 7.

The elytral sculpture of this species consists of rows of large punctures, usually round, sometimes more or less elongate. There are no striae, and the rows of punctures are at times interrupted. The sides of the thorax are gradually convergent anteriorly, very feebly rounded and with the margin slightly thickened.

Occurs abundantly in the whole Atlantic district.

Length .32-.41 inch.

*O. aciculatus*, Lec., Proc. Acad. 1858, 75

Differs from the preceding in having the elytra distinctly striate, striæ with large punctures, interstices moderately convex. Thorax more strongly rounded than the preceding, with the sides distinctly reflexed, and with the disc more convex.

Occurs abundantly in Texas.

Length .40 inch.

*O. sayi*, oblong, parallel, brownish opaque. Head finely and densely punctured; clypeus rather deeply emarginate. Thorax feebly convex, one-fifth broader than long, sides moderately rounded in front, nearly straight and slightly divergent toward the base; apex feebly emarginate, base bisinuate; surface opaque, very finely and densely punctured, lateral margin slightly thickened. Elytra sub-parallel, feebly convex, opaque, not deeply striate, and with punctures neither approximate nor deeply impressed; interstices slightly convex and very minutely punctured. Body beneath ferruginous, shining. Length .46 inch; 11.5 mm.

One specimen from Kansas, kindly given me by Mr. P. S. Sprague, of Boston.

Our species of *Opatrinus* may be known as follows :

Thorax very finely punctured; inner side of male anterior tibiæ distinctly sinuate.

*sayi*.

Thorax coarsely punctured; anterior tibiæ of male slightly arcuate only.

Elytra not striate, but with rows of large deeply impressed punctures. *notus*.

Elytra striate; sides of thorax slightly reflexed. *aciculatus*.

#### GROUP II—BLAPSTINI.

This group differs from the preceding in having the eyes entirely divided. As in the previous group, the anterior and sometimes the middle tarsi are dilated in the male, and the anterior tibiæ are also somewhat curved in the same sex; in some of the genera, however, the dilatation is but little apparent. The tibiæ and femora of both sexes in all the genera are entirely unarmed. Notwithstanding the number of genera proposed by Mulsant in this group, it has been found necessary to add several new ones.

The following table will give their differences :

Anterior tibiæ with the outer angle obliquely truncate.

Intercoxal process of abdomen triangular, acute or oval at tip.

Antennæ long, slender.

*MECYSMUS*.

Antennæ stout, joints 4-8 broader than long.

*CONIBIUS*.

Antennæ stout, joints 4-8 longer than broad.

*BLAPSTINUS*.

Intercoxal process broad truncate at tip.

*NOTIBIUS*.

Anterior tibiæ with the apex emarginate, outer angles prolonged.

Tibiæ broad, not linear.

*ULUS*.

#### *MECYSMUS*, *n. g.*

This name is proposed for a species differing from the other Blapstini by its elongate depressed form, thorax sub-quadrate, narrower at base than the elytra. The antennæ are



slightly longer than the head and thorax, slender and with the joints longer than broad. The last three joints are scarcely thicker than those which precede, although comparatively shorter, the third joint is one-and-a-half times the length of the fourth. The legs are slender and longer than usual, the anterior tibiæ slender and the tarsi dilated in the males.

*M. angustus*, Lec., (*Blapstinus*) Ann. Lyc. V., p. 146.

The thorax is sub-quadrate, the sides moderately rounded and broadest at middle, the anterior and posterior angles are not prominent, the surface feebly convex towards the sides, flattened on the disc. The elytra are twice as long as broad at base, the base emarginate, sides feebly rounded, apex obtuse. The elytra have regular striae of fine punctures, the interstices being flat and finely but sparsely pubescent.

Length .26 inch.

Found rather abundantly flying at night, at Fort Yuma, California.

#### CONIBIUS, *Lec.*

*Conibius*, Lec., Ann. Lyc. V., p. 145.

Besides the antennal characters given in the table, this genus may be known from *Blapstinus* by the small rounded superior portion of the eye. The anterior tibiæ are also broader, slightly more arcuate and finely denticulate on the outer edge. The tarsi of the male are but feebly dilated. The antennæ are much more robust than in *Blapstinus*, the third joint being, however, longer than the fourth and at least one-half longer than broad. The metasternum is short and the body apterous.

Our species are three in number.

Sides of thorax moderately rounded, hind angles obtuse, base feebly sinuate.

Thoracic margin feeble, equal.

*seriatus*.

Thoracic margin more distinct, slightly reflexed, broader behind.

*parallelus*.

Sides of thorax nearly parallel and straight, base more strongly sinuous, hind angles more distinct.

*elongatus*.

*C. seriatus*, Lec., Ann. Lyc. V., 145.

This species is more robust, broader and more convex than either of those which follow. The thorax is more strongly rounded on the sides, and convex from the margin. The margin is very narrow and equal at apex and base. The base of thorax is feebly sinuate and the angles obtuse. The surface of the insect is also much less opaque and punctured.

Length .16 inch.

Not abundant in the Colorado Desert of California.

*C. parallelus*, Lec., loc. cit.

The sides of the thorax are less rounded, the disc less convex, and the margin more evident, especially near the hind angles. The elytra are more elongate, more nearly parallel, less convex, and more coarsely punctured and opaque.

Length .16-.20 inch.

Occurs at San Jose, Cal.

*C. elongatus*, elongate, sub-parallel. Head reddish brown, coarsely and rather closely punctured. Thorax sub-quadrate, somewhat broader than long, sides rounded anteriorly, straight and sub-parallel behind, distinctly margined, margin slightly reflexed; apex feebly emarginate, angles obtuse; base strongly sinuous, angles prominent backwards; disc moderately convex, coarsely but not closely punctured. Elytra elongate, sub-parallel, densely muricately punctured, faintly sub-striate. Under surface and legs brownish or ferruginous. Length .14-.18 inch.

As in the other species, the body is ferruginous or brownish in color, the elytra alone being black and more or less opaque. The thorax at base is strongly sinuous, especially within each hind angle, the latter being rendered thereby more prominent behind. The sides of the body are also more parallel. The muricate punctures of the elytra are furnished each with a very short coarse, curved hair. The elytra of *seriatus* are entirely devoid of hairs, they are probably found on recent or well preserved specimens of *parallelus*, while in this species they are probably permanent and undoubtedly more dense than it is possible for them to be in the latter species. The females are larger and rather more robust than the males, while the latter have the anterior and in less degree the middle tarsi feebly dilated.

Occurs rather abundantly under stones in Owens' Valley, California.

#### BLAPSTINUS, Latr.

*Blapstinus*, Latr., Regne Animale ed. 2, V, p. 21.

The differences between this genus and the preceding have already been adverted to, and need but little additional mention. In this the upper portion of the eye is larger and broader transversely, occasionally sub-angulate within. The antennæ are more slender than in *Conibius*, and gradually thickened toward the tip.

Our species are numerous and may be distinguished by the characters in the following table:

Thorax with a broad flattened margin.

Alternate interspaces of elytra elevated.

*sordidus*.

Interspaces equal, elytra deeply striate.

*sulcatus*.

Thorax convex from the edge.

Elytra black or brown, without metallic lustre; striæ continuous.

Elytra with golden yellow hairs.

*auripilis*.

Elytra with greyish hairs.

Base of thorax strongly sinuate.	
Elytra very sparsely pubescent	dilatatus.
Thorax broader in front of middle.	brevicollis.
Thorax gradually narrowing from base.	lecontei.
	pratensis.
Elytra densely clothed with cinereous pubescence.	vestitus.
Base of thorax nearly truncate.	
Sides of thorax evenly rounded, not narrowing in front.	longulus.
Elytra either glabrous or with a few black hairs.	
Head, thorax and legs ferruginous.	discolor.
Body entirely black.	
Base of thorax strongly sinuous, hind angles more prolonged than the middle of the base.	mæstus.
Base of thorax less sinuate, hind angles less prolonged and less acute.	pulverulentus.
Elytra glabrous, aneous or aneous black; striæ interrupted.	
Thorax densely and coarsely punctured, less shining.	interruptus.
Thorax sparsely punctured, shining; elytra aneous.	metallicus.

*B. sordidus*, Lec., Ann. Lyc. V., 146.

This species is easily distinguishable by the flattening of the upper surface of the thorax along the lateral margin, and by the alternate intervals of the elytra being more convex than the others. The thorax is broader than long, moderately rounded on the sides which converge toward the front; rather deeply emarginate anteriorly, with acute angles. The base is broadly lobed at middle with the hind angles rather prominent backwards, and is always closely applied against the base of the elytra. The front is always deeply emarginate, exposing (when recent) the basal membrane of the labrum. The elytra are striate, the striæ closely punctured. The whole surface is clothed rather densely with coarse, scale-like, recumbent ochreous hairs. The color of the surface is brown.

Length .32 inch.

Very abundant under logs, at Camp Grant, Arizona.

*B. sulcatus*, Lec., Ann. Lyc. V., 147.

The margin is here also flattened, much less broadly however than in the preceding species. The head and thorax are densely and coarsely punctured. The latter is broader than long, rounded on the sides, scarcely narrower in front, apex emarginate, angles distinct, base sinuate, less lobed at middle than *sordidus*, and with less prominent hind

angles. The elytra are deeply striate, the interstices flat and densely punctured. The surface is clothed with a pubescence similar to *sordidus*, but coarser and paler. The color of the body is opaque brown.

Length .23 inch.

Found at Fort Yuma, California.

*B. auripilis*, elongate oval, opaque brown. Head moderately, coarsely and densely punctured. Thorax convex from the edge without depressed margin, broader than long, sides gradually converging and moderately rounded. Apex emarginate, basal angles distinct, base sinuate, lobed at middle with angles prominent backwards, surface densely punctured. Elytra feebly striate, striae punctured, interstices moderately convex and densely and finely punctured. Upper surface of body moderately densely clothed with golden yellow scale-like hairs. Beneath finely and densely punctured and clothed with similar but finer pubescence.

Length .30 inch.

Easily known from the species which precede, by the absence of a depressed thoracic margin, and from those which follow by the vestiture of the surface of the body. It is the most convex of our species.

Occurs at Camp Grant, Arizona, in company with *sordidus*, though less abundant.

*B. dilatatus*, Lec., Ann. Lyc. V., 146.

This species is usually black or deep brown in color, sub-opaque. The thorax is feebly convex, slightly flattened behind the head, sides rounded, broader at middle than at base. Apex moderately emarginate, base sinuate, angles not prominent. A slight impression on each side of base opposite the fourth elytral interval. Surface coarsely and densely punctured, punctures elongate and confluent. Elytra feebly convex, striate, striae coarsely and closely punctured, intervals flat, finely but sparsely punctured; surface sparsely clothed with brownish hairs.

Length .36 inch.

Occurs with *sordidus*, but is still more abundant.

*B. brevicollis*, Lec., Ann. Lyc. V., 147.

Similar in its characters to the preceding, differing in the shorter thorax, less rounded on the sides, less coarsely and confluent punctured. The form is slightly more elongate and more convex. The vestiture and sculpture are similar to *dilatatus*. The legs paler.

Length .26-.28 inch.

Occurs rather abundantly near San Francisco.

*B. lecontei*, Muls., Opusc. Entom. Cal. 9, p. 128; *pubescens* || Lec., Ann. Lyc. V., p. 147.

More elongate and convex than the two species which precede. The thorax is less rounded on the sides and not broader at middle than at base. The basal margin is less strongly sinuate. The punctures of the thorax are finer, less dense and not elongate, and



scarcely confluent. The surface is also more densely clothed with an ochreous pubescence, longer and much more distinct than in *dilatatus* or *brevicollis*.

Length .20-.30 inch.

Occurs at Fort Yuma and in Arizona.

*B. pratensis*, Lec., Col. Kansas and New Mexico, p. 15.

Similar in all its more important characters to *lecontei*; the sides of the thorax are however less rounded, and the apex more deeply emarginate, with more prominent angles. The ochreous vestiture is finer and much less evident, the striae of the elytra shallower and more finely punctured.

Length .24-.26 inch.

Occurs in Kansas. Specimens probably of the same species are seen, deprived of pubescence and rather larger, from New Mexico, Texas, and Arizona.

*B. vestitus*, Lec., Col. Kansas, and New Mexico, p. 15.

Early distinguishable from our other species by the rather dense greyish pubescence. The sides of the thorax are feebly rounded and converge towards the apex. The elytral striae are faint and the punctures fine. The body above is also very faintly bronzed, a character found only in the last two species in the table.

Length .20 inch.

Specimens reported from Kansas only.

*B. longulus*, Lec., Ann. Lyc. V, 147.

The base of the thorax is here so feebly sinuate as compared with our other species as to merit the distinction of being called nearly truncate. The thorax is as wide at apex as at base, sides feebly rounded, slightly sinuate near the hind angles, which are rectangular. The elytra are moderately striate with coarse punctures, the intervals feebly convex and rather coarsely punctured. The form is rather elongate and the color brownish black, shining.

Length .28 inch.

Occurs in Southern Arizona.

*B. discolor*, elongate; head, thorax and legs ferruginous, elytra black, not shining. Head coarsely and densely punctured, punctures elongate and confluent. Thorax broader than long, moderately convex, less coarsely and densely punctured than the head; apex feebly emarginate, angles not prominent; base feebly sinuate; sides feebly rounded, converging toward apex. Elytra elongate oval, convex with striae of moderately coarse punctures of which the interstices are feebly convex and finely punctured. Body beneath densely punctured.

Length .36 inch.

Easily known by its peculiar coloring. There are no signs of any pubescence. As in *longulus* the thorax is feebly sinuate at base. The elytral striae are more faint toward the base, becoming gradually more distinct toward the apex.

A single specimen from near Visalia, California.

*B. moestus*, Mels., Proc. Acad., 3, 65.

Found in the Northern and Middle States.

*B. pulverulentus*, Mann., Beitr., 276; *californicus* Motsch. Bull., Mosc., 1845, p. 77.

The species of Motschulsky is very badly described but it is doubtless the same as that described by Mannerheim.

Both this and the preceding species are deep shining black and have but few black hairs very sparsely scattered over the elytra, rarely seen except when the specimen is fresh. This species has also, when recent, a coating of whitish efflorescence previously mentioned among the species of *Trimytis*. *Moestus* and *pulverulentus* are closely related and differ only in the base of the thorax of the former being more strongly sinuous and the hind angles rather more prominent than the middle lobe of the base. Both are nearly equal in size.

Length .20-.23 inch.

Occurs abundantly everywhere in California.

*B. interruptus*, Say, (Opatrum) Journ. Acad. 3, 264; *luridus*, Muls., Opusc. Entom. Cah. 9, p. 129.

This species is separated from the synonymy in which it has been placed on account of the permanence of certain characters in a considerable series of specimens. The elytra are here black, very rarely with any metallic tinge. The thorax is densely and coarsely punctured, less shining than in *metallicus*. The species is larger, broader and more convex.

Length .22 inch.

Abundant in the Northern States and Canada.

*B. metallicus*, Fab. (Blaps), El. 1, 143; Beauv. Ins. p. 137, tab. 30b. fig. 2, *aeneolus*, Mels., Proc. Acad. 3, 66.

Smaller than *interruptus* and more distinctly metallic. The thorax is finely and sparsely punctured and shining. The punctures of the elytra are very large and cause them to appear very rugose. In both species there is a depression of the base of the thorax opposite the fourth interspace, more evident in *metallicus*.

Length .18-.20 inch.

Abundant with the preceding.

#### NOTIBIUS, Lec.

*Notibius*, Lec., Ann. Lye. V., 145.

Differs from *Blapstinus* in having the upper portion of the eyes smaller and rounder, the intercoxal process of the abdomen quadrangular and truncate, and the scutellum very transverse, scarcely visible between the elytra. Prosternum more or less prolonged behind the coxæ, mesosternum correspondingly concave; metasternum short, body apterous.

All the species exhibit some sexual peculiarity in the anterior tibiæ, especially *granulatus*, where the tibia becomes rather suddenly arcuate in its lower half forming thus an angle between the upper and lower portion.\*

Six species of this genus are known, all from the desert regions of California and Arizona. The following table shows their differences:

Elytra very broadly oval; disc faintly or not striate and rather densely but finely muricately punctured.	
Elytra sparsely pubescent.	
Surface uniformly dark brown or black.	<i>puberulus</i> .
Head and thorax ferruginous.	<i>puncticollis</i> .
Elytra not pubescent, sub-opaque, black.	<i>gagates</i> .
Elytra elongate oval or sub-parallel; disc distinctly striate or sulcate.	
Anterior tibiæ similar in the sexes.	
Ant. tibiæ neither sub-angulate nor arcuate.	<i>opacus</i> .
Anterior tibiæ dissimilar in the sexes.	
Ant. tibia ♂ sub-angulate at middle, arcuate beneath.	<i>granulatus</i> .
Ant. tibia ♂ suddenly narrower at base.	<i>sulcatus</i> .

*N. puberulus*, Lec., Ann. Lyc. V., 145.

The tibiæ of the sexes are similar to each other, but slightly more arcuate in the male. From all the other species this and the following differ in having the anterior tibiæ very broad, outer edge and hind surface finely denticulate. The thorax is broader than long, moderately convex, distinctly margined, sides feebly rounding, not converging, apex emarginate, angles obtuse, base sinuate, angles distinct; disc finely and sparsely punctured. Elytra broadly oval, scarcely one-third longer than broad, convex, faintly striate, densely finely muricately punctured, each puncture bearing a short hair. The upper surface is very dark brown in color, the legs dark ferruginous.

Length .22 inch.

Occurs in the Colorado Desert and Arizona.

*N. puncticollis*, Lec., Ann. Lyc., V., 145.

Similar to *puberulus*, differs in having the head and thorax ferruginous, the latter more convex, less margined, more densely and coarsely punctured. The elytral striæ are more evident, muricate punctures more distinct and abundant.

Length .20-.22 inch.

Occurs in the Sacramento Valley, at San Jose and near Visalia.

\* By an error of the pen, evidently, in the use of "last" for "first," this peculiar angulation of the tibia is accredited to Conibius, in the Classification of Coleoptera of N. A., p. 227.

*N. gagates*, entirely black, sub-opaque. Head densely and finely punctured; margin of epistoma paler. Thorax broader than long, convex, densely and finely punctured, sides feebly rounded, narrowing slightly toward base; apex emarginate, angles distinct; base rounded, angles obtuse. Elytra broad, convex, densely and minutely punctured. Beneath black, shining, sparsely punctured.

Length .24-.28 inch.

This species with the table needs but little description; it differs from those with broadly oval elytra in its being totally black, thorax narrower at base, base rounded, apical angles distinct, not obtuse. The elytra are less rounded on the sides, the humeri distinct. There are no elytral striæ and the punctures are very minute and irregularly placed. The anterior tibiæ also, are narrow, not broad, as in the two preceding species.

Occurs in moderate abundance at Camp Grant, under stones, and when recent is pruinose.

*N. opacus*, Lec., New Species, p. 118.

The thorax is less transverse than in the broad species which precede, is more convex and is also narrower at base and narrower than the base of the elytra. The elytra are elongate oval, rounded on the sides, with distinct humeral angles, surface striate, striæ punctured, intervals feebly convex and finely punctured. The head and thorax are very densely and confluent punctured with elongate punctures.

Length .20-.24 inch.

The measurement given by Leconte (loc. cit.) is probably a mistake, as his type is one-half longer at least than indicated (.12 inch).

The anterior tibiæ are here also similar in the sexes, and are very gradually wider from the base toward the apex.

Occurs in Arizona and Lower California.

*N. granulatus*, Lec., Ann. Lyc. V., 145.

While similar in form to *opacus*, this species has the thorax broader and less narrowed behind, the surface is densely and coarsely punctured. The elytra are deeply striate, the striæ closely punctured, the interstices convex and muricately punctured. The anterior tibiæ of the males serve to distinguish this species from any other. From the base to the middle these tibiæ are very gradually wider, below the middle the tibiæ are suddenly arcuate, causing them to appear toothed. The tibiæ of the female are gradually expanded toward the apex and are broader than the male.

Length .18-.25 inch.

Occurs at Fort Yuma and Arizona.

*N. sulcatus*, Lec., Ann. Lyc. V., 145.

The thorax is sub-quadrate, not narrower behind, sides feebly rounded, almost parallel behind the middle. The elytra are elongate oval, sub-parallel, deeply striate, striæ coarsely



punctured, interstices very convex and sparsely punctured. The males have the anterior tibiæ slender at the basal fourth, then suddenly broader and parallel toward the apex. Those of the female are similar to the preceding species.

Length .19-.25 inch.

Occurs at San Diego, Lower California, and Arizona.

All the preceding species, excepting *gagates*, have ferruginous legs.

#### ULUS, *n. g.*

The above generic name is suggested for two species of *Blapstinus* differing from the typical form in having the anterior tibiæ more dilated, emarginate at apex, with the outer angle prolonged. The species resemble *Trichoton*.

Thorax gradually narrowing from base to apex.

*obliquus*.

Thorax as wide at middle as at base.

*crassus*.

*U. obliquus*, Lec., (*Blapstinus*) *New Species*, p. 117.

The thorax gradually narrows from base to apex. The surface is sparsely clothed with short brownish hairs.

Length .32 inch.

From Cape San Lucas, Lower California.

*U. crassus*, Lec., (*Blapstinus*) *Ann. Lyc. V.*, 146.

The sides of the thorax are more strongly rounded and as wide at middle as at base. The vestiture of the surface consists of ochreous scale-like hairs, rather densely placed.

Length .22-.26 inch.

From around San Francisco, California.

#### TRIBE XXII—OPATRINI.

Mentum small, supported by a distinct gular peduncle; head deeply inserted, always more or less emarginate in front; eyes variable, coarsely granulated, rarely divided; labrum visible; antennæ gradually clavate or with the last three joints suddenly broader; intercoxal process of abdomen usually broad, truncate; anterior tibiæ (of our genera) broad, triangular, spurs distinct; tarsi of male not dilated.

There can be no point of difference given between this tribe and the preceding that will not be found subject to some exceptions. The simple tarsi of the male is that one however, most to be relied on, taken in connection with other characters which, though of small value, show this tribe to be abundantly a distinct type from the preceding. Among these may be classed the broader head, very deeply inserted, almost concealing the eyes from above, and with a more prominent epistoma. The mentum also, is simple, never sub-trilobed as in many of the genera of *Pedinini*. The small number of genera in

our fauna renders it unadvisable to enter further into the discussion of this question. To those who desire to pursue it further, the works of Lacordaire and Mulsant afford abundant means.

The following table exhibits our genera.

Tibial spurs small; last joint of maxillary palpi triangular.	
Anterior tibiæ slightly dilated, outer angle prolonged; antennæ with the last four joints suddenly broader; intercoxal process acute.	AMMODONUS.
Anterior tibiæ broad, triangular; antennæ with gradually broader joints; short, clavate.	EPHALUS.
Tibial spurs very large; last joint of maxillary palpi oval.	
Intercoxal process triangular, acute; eyes large.	CNEMEPLATIA.
Intercoxal process very broad, rounded; eyes absent.	ALAUDES.

Each of the above genera may be considered as the representative of a distinct subtribe. The characters of each will be given in more detail as each genus is considered.

#### AMMODONUS, *Muls.*

*Ammodonus*, Muls., Opusc. Ent. Cahier X, p. 143.

Body oval, moderately convex. Epistoma rather broadly emarginate. Eyes coarsely granulated, emarginate in front by the side of the head. Last joint of maxillary palpi feebly triangular. Antennæ longer than the head, first two joints thicker, third joint larger than the fourth, joints four to seven gradually shorter and more transverse, eight to eleven rather suddenly broader. Prothorax applied against the base of elytra. Scutellum small. Elytral epipleuræ gradually narrower toward apex, extending slightly beyond the fourth ventral suture. Anterior tibiæ gradually wider, external apical angle much prolonged and acute. Tibial spurs small. Middle and hind tibiæ slender. First and last joints of hind tarsi equal and longer than second and third together. Intercoxal process of abdomen triangular, acute. Hind margin of third and fourth ventral segments distinctly sub-coriaceous and feebly arcuate. Body winged.

*A. fossor*, Lec., (*Opatrum*) Journ. Acad., 2d Series, 1, p. 92; Muls. (*Ammodonus*) Opusc. Ent. Cah. X, p. 144.

The generic characters are of such a nature as renders any detailed description of the unique species unnecessary. The margin of the body is fringed with short hairs, the surface black, but densely clothed with ash-colored scales. On the elytra the vestiture is less dense, and three series of rounded spots are visible on each elytron, in which the scales are paler and more densely placed. The under surface and legs are paler and the scales sparsely scattered.

Length .18-.22 inch.

Not common in collections. It has been found in considerable numbers burrowing in the sand in the neighborhood of Trenton, and at Bath, Long Island.

EPHALUS, *Lec.*

Ephalus, Lec., Class. Col. N. A., p. 227.

Broadly oval, convex, resembling *Cœlus*. Epistoma deeply emarginate, sides of front slightly sinuous, forming an angle in front of the eyes, which are feebly emarginate. Last joint of maxillary palpi feebly triangular, longer than broad. Antennæ very short clavate, first two joints broader, second and third equal in length, four to eleven very short, transverse and perfoliate, the last joint being slightly narrower and longer than the preceding. Thorax applied against the base of elytra. Scutellum small, transverse. Epipleuræ broad, concave, incomplete behind. Intercostal process of abdomen short, obtuse in front. Hind margins of third and fourth ventral segments distinctly sub-coriaceous, feebly arcuate. Anterior tibiæ flat, triangular, outer apical angle not prolonged. Spurs small. Hind tarsi with the last joint slightly longer than the first, and both longer than the second and third together. Body apterous.

The form of the anterior tibiæ and intercostal process of abdomen, and more especially the structure of the antennæ, indicate this genus as the type of a sub-tribe distinct from that represented by the preceding genus, differing also from the *Stizopodes* of Lacordaire or any of the "Branches" defined by Mulsant.

*E. latimanus*, Lec., (*Heliopates*) Journ. Acad. Series 2, 1, p. 92.

Form similar to *Cœlus* or *Eusattus convexus*. Black, opaque. Margin of body fringed with yellowish hairs. Surface rather densely muricately punctured, each puncture bearing a small yellowish hair. Elytra very faintly sub-striate.

Length .30-.36, width .20-.24 inch.

Rather rare in the New England States.

CNEMEPLATIA, *Costa*.

To this genus I refer a very rare insect collected by myself in Owens' Valley, California. Specimens of the rare European species of *Cnemeplatia* are before me, and I am unable to detect any differences not within the bounds of generic limitation. The epistoma is rather more deeply emarginate and the edge slightly more reflexed. The front in *Cnemeplatia* has a slight impression on either side, not evident in this insect. The epipleuræ are entire in both, and the intercostal process triangular and acute. The palpi are rather short, the last joint of maxillary oval. The antennæ are similarly constructed, although the last three joints are in the California species somewhat broader. Both species are winged. The anterior tibiæ are triangular and the spurs large.

*C. sericea*, elongate oval, sub-parallel, moderately convex. Head sub-quadrangular, broader than long, emarginate in front and with slightly reflexed margin, eyes prominent, feebly emarginate in front, surface feebly convex, densely and finely punctured, and densely clothed with a yellowish, grey, recumbent silken pubescence. Thorax trapezoidal, slightly narrower behind and broader than long, moderately convex, densely and finely punctured and densely

clothed as the head; anteriorly feebly emarginate, angles obtuse, sides feebly rounded, base rounded, angles nearly rectangular. Elytra elongate oval, sub-parallel, apex obtuse, base feebly emarginate, humeri moderately prominent; moderately convex above with striae of coarse punctures, and clothed as in the head and thorax. Under surface of body finely punctured and pubescent, the under surface of thorax and prothorax more densely.

Within each hind angle the base of the prothorax is a rather broad impression, rendering the middle of the base more prominent; there is also a slight impression opposite the scutellum. The pubescence of the upper surface is uniformly distributed on each of the divisions except on the elytra, where a sub-transverse triangular spot more denuded is seen at the middle of the lateral margin and mid-way between this and the apex. These spots are broadest at the margin and are present on both sides of the two specimens in my possession. As compared with the European species, the thorax is longer, less narrowed behind and feebly emarginate in front; the base slightly narrower than, and the apex equal to, the width of the elytral base. The ground color of the insect is reddish brown one of the specimens being rather darker.

Length .12 inch.

Rare in Owens' Valley, California, under stones.

ALAUDES, *n. g.*

Anterior tibiae broad, triangular, spurs very large. Intercoxal process of abdomen short, broad, rounded in front. Head transverse, broader behind, emarginate in front, sinuate on the sides. Eyes absent. Antennae ten-jointed, first two thicker, intermediate short, broader than long, compactly placed, last three forming an oval compact club, of which the terminal joint is longer. Mentum very short, transverse; ligula not prominent; palpi very short. Maxillary palpi short, last joint oval, slightly arcuate. Gular region prominent, peduncle of mentum broad, emarginate, angles prominent forward. Prosternum not prominent. Thorax very transverse. Elytra elongate oval, straight on the sides, connate; body apterous. Scutellum transverse. Hind tarsi with the first joint rather shorter than the last.

The absence of eyes and the form of the intercoxal process of the abdomen will serve to distinguish this genus from any of those with triangular tibiae and with the last joint of the maxillary palpi oval. The margin of the head is slightly sinuate at the position usually occupied by the eyes, and the anterior and posterior canthi of the eye here are in contact. Beneath the margin of the front the side of the head forms a broad groove, near the anterior limit of which the antennae as usual, arise. This broad groove may be considered as merely the continuation of that in which the antennae usually arise, owing to absence of any prominence in the region of the eye. The gular region is flat, suddenly declivous on the sides; the lateral margins converge to the front, where it is deeply emarginate, with the angles prominent. The mentum is situated at the bottom of this semi-



lunar emargination, short and transverse. The ligula is almost entirely concealed. The mandibles are anteriorly emarginate at tip. The parapleuræ of the metathorax appear to be connate with the sternum, at least the sutures cannot be detected with such microscopic power as can be used. The prothorax is very short, nearly three times as broad as long, broadly emarginate in front, trisinate at base. At the middle of the base of the thorax, opposite the scutellum, is a very abrupt and deep depression, and between it and each angle a moderate sinuation. The elytra have also a scutellar depression opposite that of the prothorax. The humeri are distinct and the base feebly emarginate.

*A. singularis*, oval, brownish, sub-depressed. Head and thorax (densely and coarsely punctured) densely clothed with yellowish scales, of which some are larger and more prominent. Thorax slightly narrower behind, sides feebly rounded, hind angles obtuse. Elytra with nine rows of large punctures, the interspaces bearing short, thick, erect, capitate yellow hairs distantly placed. Head, prothorax and legs beneath clothed with yellowish scales, the rest of the surface coarsely but sparsely punctured, and with a few scattered scales.

Length .06 inch.

The head and thorax are so closely covered by scales that it is impossible to tell whether there is any puncturing or not. With the exception of the erect capitate hairs, the elytra are not clothed, and the surface is rather reddish brown and moderately shining. This insect is by far the most interesting and singular of any of those discovered by myself in California, and adds another to the list, still very limited, of blind Tenebrionidæ, and is the only blind insect known from California. The specimens are very rare and found living with a small black ant under stones. They are difficult to obtain, owing to their rarity, the peculiar conditions demanded as a residence by the ant and by the excessive numbers of the latter when found, rendering it very troublesome to search carefully in their neighborhood.

#### TRIBE XXIII—CRYPTICINI.

Hind coxæ moderately distant, oblique. Head inserted as far as eyes, which are small and reniform and not coarsely granulated. Antennæ slender, outer joints rounded, slightly thicker. Prosternum prolonged, mesosternum concave. Anterior coxæ nearly round, middle coxæ with distinct trochantin. Tarsi spinous beneath; first joint of hind tarsi very long.

#### CRYPTICUS. *Latr.*

*Crypticus*, Latr., *Regne Anim.* ed. 1, III, p. 298.

One genus and species constitute this tribe in our fauna, easily known by its oval depressed form, resembling somewhat an *Hydroporus*.

*C. obsoletus*, Say, *Journ. Acad.* III, 265.

Length .14-.16 inch.

Occurs in the Southern Atlantic region.

## TRIBE XXIV—ULOMINI.

Body elongate oval, usually somewhat depressed. Head deeply inserted in prothorax, short, frequently broad and emarginate in front. Frontal suture always distinct. Labrum usually prominent, transverse. Mentum variable in most of the genera, trilobed, with the middle lobe prominent. Maxillary palpi with the last joint usually triangular, sometimes elongate oval. Antennæ gradually thickened toward apex, (rarely with the terminal joints forming a club) and more or less perfoliate; third joint not very long. Eyes variable, always more or less emarginate by the sides of the front and the sides of the head behind, never entirely divided. Anterior coxæ sub-transverse or sub-cylindrical, middle coxæ without trochantin. Intercoxal process of abdomen acute or oval, never broad. Tarsi pubescent beneath, last joint elongated. Tibial spurs always visible, never very large. Body winged, rarely apterous.

The tribes of the family Tenebrionidæ are all difficult of definition, and no one is probably more troublesome than this one, and it is only on the table of characters given above, taken as a whole, that the tribe must be considered as limited. In the structure of the antennæ and the absence of trochantin to the middle coxæ, we find the only points of difference between the Ulomini and Tenebrionini. The Diaperini are still less distinct, for with a form of antenna not unlike (though at times sub-serrate) we find the structure of the front offering the most striking points of difference. In Diaperini the eyes are always round, prominent, feebly emarginate in front and always more prominent than the genæ. In the course of the study it has seemed advisable to preserve the Diaperini distinct from the Ulomini, in lieu of uniting them, as has been done by Duval. Its composition is here substantially that of Lacordaire, less Hypophlœus and some genera unknown to him by specimens. The tribe Hypophlœini of Leconte appears to me untenable, the character defining it, the invisibility of the clypeal membrane, is not constant and the membrane is frequently visible in some of the genera of Tenebrionini and Pedinini. The genus *Pratæus*, Lec., is found to have a faintly sub-bilobed penultimate tarsal joint and a sculpture strongly recalling *Anædus*, etc., and has been united with the Heterotarsini. As defined, the tribe has many genera; some new to our fauna are now added, while others entirely new are indicated.

The following table exhibits the characters of our genera, as far as can be done in a synoptic table.

A. Antennæ with the last two or three joints suddenly broader.

Epipleuræ very narrow at tip; antennal club three-jointed.

TRIBOLIUM.

Epipleuræ distinct at tip; antennal club two-jointed.

DICEDUS.

B. Antennæ gradually broader toward the tip.

Base of thorax applied against the bases of the elytra, or somewhat distant from them; never overlapping.

Head of male either tuberculate or horned, and last joint of maxillary palpi oval; mentum small.

Head of male tuberculate; mandibles with a horn above.

Mandibles above broad, recurved, and not toothed. GNATHOCERUS.

Mandibles above slender, incurved and toothed. ECHOCERUS.

Head of male with two long horns, arising within and above the eyes.

EVOPLUS.

Head of male not tuberculate; last joint of maxillary palpi triangular; mentum moderate.

Epipleuræ entire.

Anterior tibiæ slender, similar to the middle tibiæ.

Head of male with two tubercles above; femora mutic.

ULOSONIA.

Head of male simple; femora broad and with a broad tooth near apex.

MEROTEMNUS.

Anterior tibiæ more or less dilated, broader than the middle tibiæ.

Prosternum prolonged; mesosternum deeply emarginate.

MECOTROGUS.

Prosternum not prolonged; mesosternum very slightly concave.

Front tibiæ not denticulate; last joint of antennæ quadrangular, truncate.

APHANOTUS.

Front tibiæ finely denticulate; last joint of antennæ oval.

ALPHITOBIVS.

Epipleuræ abbreviated.

Anterior tibiæ slender.

First joint of hind tarsi long.

CYNÆUS.

First joint of hind tarsi short.

METACLISA.

Anterior tibiæ broad, serrate.

ULOMA.

Base of thorax margined, hind angles covering the humeral angles of the elytra; outer joints of antennæ not perfoliate.

Anterior tibiæ slightly dilated, finely denticulate. Epipleuræ abbreviated. Last joint of maxillary palpi broadly triangular.

EUTOCHIA.

TRIBOLIUM, *MacLeay*.

*Tribolium*, MacLeay, *Annulos. Javan.*, p. 47.

The mentum in this genus is very nearly square, with rounded anterior angles. The last joint of the maxillary palpi elongate oval, truncate at apex. Antennæ slender, last three joints suddenly dilated, forming a flattened club, truncate at apex. The epipleuræ are entire but extremely narrow at tip. Anterior tibiæ very feebly dilated and perceptibly broader than those of the middle pair.

Two species are known in our fauna.

*T. ferrugineum*, Fab., (*Trogosita*): Wollaston (*Tribolium*).

*T. madens*, Charp., (*Tenebrio*): Redtenbacher (*Tribolium*).

The former species is ferruginous, the latter black. Length .16-.20 inch. The latter species is the larger. As these two species are imported and full descriptions and details of synonymy are given in many readily accessible works on European Coleoptera, it is deemed unnecessary to repeat them.

Both species are found abundantly wherever meal or grain is stored.

DIEEDUS, *Lec.*

*Dieedus*, *Class. Col. N. A.*, 238. *New Species*, p. 132.

Mentum trapezoidal, narrower behind, anterior angles distinct, convex along the median line and coarsely punctured. Last joint of maxillary palpi elongate oval, scarcely compressed. Antennæ with the first joint cylindrical, thick, last two joints suddenly broader, compressed and pilose, the last joint being the larger. Epipleuræ entire, as broad at apex as at middle. Intercostal process of abdomen moderate, rounded at tip. Anterior tibiæ slightly dilated, outer apical angle distinct, external edge with a few small teeth, spurs rather large.

*D. punctatus*, Lec., loc. cit.

A small, elongate oval, black species, with the head and thorax and elytral striae coarsely punctured. The elytra have eight striae but no scutellar stria. In the specimens in my possession the suture defining the epistoma is quite distinct, the line being darker and smoother than the rest of the front. The epistoma is narrow, short and semilunar.

Length .10-.15 inch. Found rather abundantly under pine bark, over our whole country.

GNATHOCERUS, *Thunb.*

*Gnathocerus*, Thunberg., *Act. Holm.* 1814, p. 47.

Mentum small, trapezoidal. Maxillary palpi elongate oval, very obliquely truncate at tip. Epipleuræ short. Base of thorax rather distant from base of elytra. Head with



two short horns between the eyes. Mandibles ( $\tau$ ) with a broad ramus ascending above the head, the inner being simple and the apex curved backward. Side margin of head ( $\varsigma$ ) broadly foliaceous and prominent in front of each eye. Eyes deeply emarginate in front and behind and nearly divided. Middle of epistoma prominent; on each side emarginate for the ramus of the mandible. Antennæ gradually dilated. Anterior and middle tibiæ similar, not dilated.

*G. cornutus*, Fab., (Trogosita); Thunberg., (Gnathocerus); Lucas, (Cerandria).

As this insect has been introduced and is by no means common in this country, the student is referred for a fuller description and an excellent figure to Duval, Gen. Col. Europe.

Length .18-.20 inch.

The only specimen known to me was found in California, inside of an army biscuit.

#### ECHOCERUS, *n. g.*

This generic name is suggested for *Gnathocerus maxillosus*, which differs from the type of the genus in which has been placed, in the following particulars:

Eyes rounded, prominent, feebly emarginate in front and not all behind. Sides of front less foliaceous and not prominent. Antennæ more or less robust, last joint subquadrate. Superior ramus of mandibles more slender, toothed and incurved. First joint of hind tarsi not longer than the second and third.

*E. maxillosus*, Fab., (Trogosita); Mann., (Cerandria).

This is also an introduced insect, found principally in the Southern States.

Length .12 inch.

#### EVOPLUS, *Lec.*

*Evoplus*, Lec., New Species, 128.

The description of Dr. Leconte (loc. cit.) leaves nothing to be desired, and is so recent as to render it unnecessary to repeat any portion of it after the table of genera already given.

*E. ferrugineus*, Lec., New Species, p. 128.

This genus is undoubtedly near that described as *Peneta*, and probably forms a link between it and *Gnathocerus*.

Length .20 inch.

Found heretofore only in Louisiana.

#### ULOSONIA, *Casteln.*

*Ulosonia*, Casteln., Hist. Nat. des Coleopt. II, p. 220.

Although the head of the male is here (in our species) tuberculate, or in some species horned, the maxillary palpi have the last joint broadly triangular or securiform. Epiplauræ entire. Anterior tibiæ slender.

*U. marginata*, Lec., (*Uloma*) Ann. Lyc. V, 149; (*Ulosonia*) Gen. Col. N. A., p. 233.

Similar in form to *Uloma*, with the margin of the elytra more reflexed.

Length .33 inch.

Found under Cottonwood bark, along the Gila and Colorado Rivers.

#### MEROTEMNUS, *n. g.*

This name is suggested for an elongate Ulomide with entire epipleuræ and slender front tibiæ, differing from *Ulosonia* in the epistoma more prominent, suture not impressed, front not tuberculate. Femora clavate and flattened, emarginate at tip, and with a broad tooth at the emargination, on the middle and hind femora.

*M. elongatus*, elongate, sub-parallel, moderately convex shining, ferruginous brown. Head moderately convex, sparsely and finely punctured, not tuberculate, frontal suture not impressed. Thorax sub-quadrate, one-fifth broader than long, sides nearly parallel, very feebly rounded, margin distinct, slightly reflexed, apex emarginate, angles not prominent, base almost truncate, angles rectangular; disc sparsely and finely punctured. Elytra elongate, more than twice longer than broad, sides slightly converging toward apex, base truncate on each side, emarginate at middle, slightly broader than base of thorax, angles rectangular; nine entire and one short scutellar stria, moderately punctured, interstices convex, smooth. Beneath very finely and sparsely punctured. Body winged.

Length .24 inch.

The femora of this insect are much more strongly clavate than any other of our genera of Ulomini. The anterior femur is not emarginate near the apex, but slightly sinuous, the middle and hind pairs distinctly emarginate, the tooth of the latter being quite large and rather acute at tip.

One specimen is known to me, presented to Dr. Leconte by Mr. Ulke, who received it from California.

#### MYCOTROGUS, *n. g.*

This genus differs from all our other genera of Ulomini in having the prosternum prolonged, mucronate and with a deeply emarginate mesosternum. From *Erelus*, Muls., it differs in the tuberculate head, the convex mentum with the middle lobe rather prominent in front. The third joint of the antennæ is longer than the fourth. The epipleuræ are entire, nearly as broad at apex as at middle, the anterior tibiæ dilated, very finely denticulate and slightly arcuate. The hind tarsi have the first joint longer than the second and third. Body winged.

*M. piceus*, elongate oval, depressed, piceous, black, shining. Head rather densely punctured, suture of epistoma impressed, epistoma and sides of front ferruginous. Thorax sparsely punctured, broader than long, feebly convex, sides moderately rounded and margined, gradually narrowing to apex, which is rather deeply emarginate, angles prominent, not acute; base strongly sinuate, hind angles rectangular. Elytra oval, one-half longer than broad, feebly rounded on the sides, base emarginate at middle and truncate at sides; apex obtusely rounded. Disc with eight entire and a short scutellar stria of moderate punctures. Striæ feebly impressed. Beneath sparsely and finely punctured. Antennæ and legs paler.

Length .24 inch.

Above each eye in this insect is a rather small tubercle, similar to that seen in our species of *Ulosonia* ♀. The frontal suture is also similarly impressed and the epistoma convex. One specimen is known, of similar derivation as that of the preceding genus.

*M. angustus*, brownish ferruginous, moderately shining, elongate oval, parallel. Head rather coarsely but sparsely punctured. Thorax slightly broader than long, feebly convex, coarsely but sparsely and irregularly punctured; apex emarginate, angles not prominent; base bisinuate, angles rectangular; sides anteriorly rounded, posterior three-fourths straight and parallel, finely margined, margin slightly reflexed. Elytra elongate, parallel, apex obtuse, base emarginate at middle, with eight striae of elongate punctures, one marginal and a very indistinct scutellar stria; interstices flat, finely and sparsely punctured. Propleurae coarsely but sparsely punctured, pectus and abdomen finely and sparsely punctured, smooth and shining.

Length .16-.20 inch

Camp Grant, Arizona, under Cottonwood bark.

The male is narrower but smaller than the female, and the frontal tubercles distinct, though less prominent than in the preceding species. The base of the thorax has also a distinct impression on each side, scarcely evident in the female. This species differs from the preceding in its more elongate and less depressed form, its color and the form of the thorax. In *piceus* the thorax gradually narrows from base to apex, in *angustus* the thorax is rounded only in front, while the posterior three-fourths are straight and parallel.

#### APHANOTUS, *Lec.*

*Aphanotus*, *Lec.*, Gen. Col. N. A., p. 233.

In addition to the characters given in the synoptic table, the following will serve to render this genus more certain of recognition, when all the foreign genera of the tribe are taken into consideration.

Epistoma truncate in front, convex at middle, slightly concave on the sides, suture indistinct. Eyes very deeply emarginate in front, superior portion elongate, oblique. Antennae short, rather robust; first and second joints thicker than the third; second short, nearly globular; third slightly longer than fourth; joints four to eleven very gradually broader, last joint larger and truncate at tip. The hind tarsi are short, first joint equal to the two intermediate, and last joint slightly longer than the first. Intercoxal process rounded at tip.

*A. brevicornis*, *Lec.*, (*Eulabis*) Proc. Acad. 1859, p. 78.

The head and thorax are coarsely, the latter rather densely punctured. The elytra are sculptured with rows of faintly impressed punctures, the interstices of which are flat except at middle, where they form a moderately elevated fine line.

Length .25 inch.

From California.

ALPHITOBIOUS, *Steph.*

Alphitobius, Stephens, Illust. Brit. Ent. V, p. 11.

*A. diaperinus*, Panzer, (Tenebrio); Wollaston, (Alphitobius).

*A. piceus*, Oliv., (Helops); Muls., (Alphitobius).

These two insects are not natives of our country, and therefore require no special mention. For full description, both of genus and species, the student is referred to the works on the species of the various European local faunæ. Large numbers are occasionally brought in vessels from various parts of the world. A few years since a vessel arrived at Philadelphia from Sierra Leone, the cargo of which was plentifully overrun by the latter species. As far as I can discover, all the specimens found are direct importations, and they do not appear to propagate.

CYNÆUS, *Lec.*

Cynæus, Lec., Gen. Col. N. A., p. 233.

The eyes are rather large and convex, deeply emarginate in front, slightly behind; inferior portion of the eye large. Antennæ with the third joint nearly equal to fourth and fifth; joints five to ten transverse, last joint oval. Hind tarsi slender, first joint long.

*C. angustus*, Lec., (Plalydema) Ann. Lyc. V, 149.

Thorax broad, equalling one-and-a-half times the length, emarginate in front, sides strongly rounded, not narrowing in front, as broad as the elytra. Elytra feebly striate, striæ punctured, interstices feebly convex, densely and finely punctured.

Length .20-.22 inch.

Found in the Colorado Desert of California, probably near Vallecito.

*C. depressus*, n. sp.

Differs from the preceding as follows: Thorax less transverse, nearly truncate at apex, sides very feebly rounded, narrowing in front. Base narrower than the base of elytra. Striæ of elytra not deep, more evident at apex, interstices more sparsely punctured. In both species the head and thorax are rather densely, but not coarsely punctured.

Length .22-.30 inch.

Occurs in the southern Coast Range of California.

METACLISA, *Duval.*

Metaclisa, Duval, Gen. Col. Europe. III, p. 296.

In this genus the mentum is distinctly trilobed in front, the middle lobe prominent, lateral lobes inflexed. The anterior tibiæ are slender, the epipleuræ short and the first joint of the hind tarsi not longer than the two succeeding joints together.

*M. marginalis*, piceous black, shining, elongate oval, sub-parallel. Head slightly broader than long, feebly emarginate in front, coarsely but not densely punctured, epistoma paler and the more finely and densely punctured.



Thorax one-third broader than long, moderately convex, coarsely but sparsely punctured, anteriorly emarginate, angles not prominent, base broadly sinuous, sides moderately rounded, gradually narrowing toward apex, margin slightly reflexed. Elytra elongate oval, parallel, sub-depressed; with eight entire and a short scutellar stria; striae punctured; interstices flat, very feebly and rather sparsely punctured. Beneath ferruginous brown, sparsely but coarsely punctured.

Length .28-.30 inch.

The upper surface is piceous black and shining, except the basal, sutural and lateral margins of the elytra, the lateral and apical margins of the thorax and the epistoma, which are ferruginous brown; the under surface and legs are similar in color, but paler.

Occurs in Northern California and along the high regions of the Southern Sierras, under bark in fungus.

#### THARSUS, *Lec.*

Tharsus, Lec., Class. Col. N. A., p. 233.

For the present this genus is retained as distinct, differing however, by some slight characters which are at present considered valid. The mentum is here trapezoidal, not trilobed in front but rounded, the anterior angles are slightly inflexed and the middle flat, coarsely punctured, not prominent. The last joint of the maxillary palpi is triangular, not securiform. The front tibiæ as in *Metaclisa*, are similar, and the epipleuræ short. The hind tarsi are short, the first joint not equalling the second and third together.

*T. seditiosus*, Lec., New Species, p. 122.

Resembles a small *Uloma*. For a description the student is referred to the rather recent description of Dr. Leconte.

Length .20-.24 inch.

Rather abundant in the Gulf States.

#### ULOMA, *Cast.*

*Uloma*, Cast., Hist. Nat. Ins. Col. II, 219.

Easily distinguished from all our genera of the tribe, by its short epipleuræ and dilated, denticulate anterior tibiæ. The mentum is variable, frequently trilobed in front, with the lateral lobes inflexed.

Our species are numerous. From their mode of life some species have become widely diffused and almost cosmopolite.

The following table will serve to aid in distinguishing our species:

Lower edge of anterior femora feebly channeled along their entire length.

Epistoma feebly emarginate or truncate.

Last joint of antennæ rounded at tip.

Middle plate of mentum elongate oval; interstrial spaces

of elytra entirely smooth.

*impressa*.

Middle plate of mentum transversely oval; interstitial spaces of elytra densely punctulate.	punctulata.
Last joint of antennæ oblique, pointed.	imberbis.
Epistoma deeply emarginate.	longula.
Lower edge of anterior femora with a broad fossa near the tip, and slightly emarginate.	mentalis.

The groove of the lower edge of the anterior femora differs but little in the first five species, and is limited anteriorly by a ridge extending from the base to the apex, so that the lower edge of the femur when viewed from the front is very nearly a straight line. In the last species however, the channel is replaced by a broad fossa rather deeper than the groove in the other species, defined anteriorly by a ridge, not extending to the base, which when viewed from the front appears emarginate near the apex of the femur. The remaining characters in the table are sufficiently plain to be readily recognised.

*U. impressa*, Mels., Proc. Acad. 3, 64.

Our largest species, and for a long time considered identical with the European *culinaris*, from which it differs by its larger size and different sculpture of mentum (See Leconte, New Species, p. 123).

Length .46 inch.

Occurs abundantly everywhere in the Eastern and Middle States,

*U. imberbis*, Lec., New Species, p. 123.

Similar in form and sculpture to the preceding, differing however, in the transverse middle plate of mentum and the form of the last joint of the antennæ.

Length .32-.36 inch.

Occurs with the preceding, but less common, more abundant in the Southern States.

*U. mentalis*, n. sp.

Similar in form and sculpture to *imberbis*, but differs in having a rather less robust form and a stouter thorax. The terminal joint of the antennæ is rounded at tip, not oblique. The anterior femur has near its apex a rather broad fossa replacing the entire groove of the other species. The edge does not extend from apex to base, and is not a straight line, but sinuous at the position of the fossa. The middle plate of mentum is deeply concave, smooth and shining, with the edge somewhat thickened in the male (female not seen). The epistoma is more nearly truncate than any other of our species.

Length .34 inch.

Two specimens from Texas and Kansas.

*U. longula*, Lec., Proc. Acad. 1861, p. 353.

More elongate and parallel. Epistoma deeply emarginate. Anterior femur grooved,

edge entire and straight. Last joint of antennæ rounded at tip. Striæ feebly impressed, interstices flat, smooth. The form of mentum is more nearly allied to *impressa*, being scarcely broader than long, rather strongly punctured, and with a groove on each side, the lateral lobes are not distinct.

Length .36-.42 inch.

Occurs in Northern California.

*U. punctulata*, Lec., New Species, p. 124; *cava*, Lec., (ibid).

The two species above cited are united under the name most applicable to them. The differences of sculpture are but light and vanish in the larger series now at my disposal. The form is elongate oval, sub-parallel, as in the last species. Its color is uniformly ferruginous. The thorax usually parallel behind the middle. Epistoma very feebly emarginate. Last joint of antennæ rounded at tip. Femora with entire groove. Interstrial spaces of elytra rather densely punctured and feebly convex.

Length .28-.33 inch.

Texas, Louisiana, and Florida.

In the preceding short descriptions only the more important and peculiar characteristics of each species noted. The species of *Uloma* have a remarkable resemblance to each other, and the continuous repetition of similar forms of expression has here, as elsewhere in this paper, been deemed altogether unnecessary.

#### EUTOCHIA, Lec.

*Eutochia*, Lec., Class. Col. N. A., p. 238.

*Delopygus*, Lec., New Species, p. 129.

On renewed examination the differences between these two genera appear to be so slight as to warrant their union. The epipleuræ of the elytra do not extend to the tip in either genus, and the very slight difference in degree of serration of the anterior tibiæ is barely specific, and what might be expected to occur in species of different size.

*E. picca*, Mels., (*Uloma*) Proc. Acad. 3, 64; Lec., (*Eutochia*) loc. cit.

Black and shining, oval, convex.

Length .33 inch.

Occurs rather abundantly in the Middle States.

*E. crenata*, Lec., (*Delopygus*) New Species, 129.

Smaller, more elongate and less convex than the preceding, brownish in color, with the sutural and lateral margins of elytra paler.

Length .22 inch.

Occurs in Texas.

## TRIBE XXV—HETEROTARSINI.

Head not deeply inserted, eyes large, coarsely granulated. Antennæ gradually thicker. Middle coxæ with distinct trochantin. Tibial spurs small. Penultimate joint of tarsi more or less bilobed. Tarsi with coarse pubescence beneath.

These few characters will serve to render the tribe easy of recognition and separation from any of the neighboring tribes. It appears more closely allied to the Tenebrionini than to the tribes immediately preceding or following. The tribe is a small one, and composed in our fauna of but three genera, easily known by the very coarse punctures with which they are ornamented, and may be distinguished as follows:

Antennæ very gradually thicker; epipleuræ entire but narrower at tip;  
body pubescent.

ANÆDUS.

Antennæ with the last three joints larger.

Margin of thorax denticulate; body pubescent.

PARATENETUS.

Margin of thorax not denticulate; body glabrous.

PRATEUS.

ANÆDUS, *Blanch.*

Anædus, Blanch., Hist. Nat. Ins. II, p. 35.

*A. brunneus*, Zieg., (Pandarus) Proc. Acad. 2, 45.

The margin of thorax of this species is very distinct and reflexed, and the hind angles prominent.

Length .22 inch.

Abundant under bark, in the Middle States.

*A. rotundicollis*, Lec., Ann. Lyc. V, p. 150.

The margin of thorax is very narrow, and the hind angles much less prominent than the preceding species.

Length .17 inch.

From the Desert of the Gila River of Arizona.

PARATENETUS, *Spinola.*

Paratenetus, Spinola, Monog. Clerites, II, p. 118.

*P. punctatus*, Solier, *loc. cit.*, tab. 44, fig. 5.

Thorax with sides rounded in front, gradually narrowing behind the middle.

Length .12-.16 inch.

Abundant in the Middle and Eastern States.

*P. fuscus*, Lec., Agass. Lake Superior, p. 223.

Differs from *punctatus* by smaller size, more robust form, more convex thorax and elytra, the latter shorter and more rounded on the sides. The sides of the thorax are



strongly rounded from the front to the hind angles, which are also less distinct than in *punctatus*.

Length .08-.10 inch.

Occurs in Canada and the States bordering the Great Lakes.

In Bull. Mosc. 1868, p. 192-3, Motschulsky has indicated two species from the Southern States unknown to me.

The following table gives the species named by him :

Sides of thorax five toothed.	
Thorax and elytra unequally punctured.	<i>punctatus</i> , Sol.
Thorax and elytra equally punctured. Thorax cordate, hind angles prominent.	<i>cribratus</i> , Motsch.
Sides of thorax three toothed.	
Elytra gibbous, antennal mass concolorous.	<i>gibbipennis</i> , Motsch.

#### PRATEUS, Lec.

Prateus, Lec., Class. Col. N. A., p. 238; New Species, p. 131.

This genus has been removed from the association in which it was placed by Dr. Leconte, as on renewed examination with fine specimens the penultimate joint of the tarsi is found to resemble that of the other genera of Heterotarsini, although less distinctly lobed. It may readily be known by the sub-quadrate thorax, not denticulate; epipleuræ broad at tip; body glabrous, strongly punctured.

*P. fuscus*, Lec., loc. cit.

Length .14 inch.

Specimens are reported from New York and South Carolina; it probably occurs everywhere in the Atlantic region, though rare.

#### TRIBE XXVI—TRACHYSCELINI.

Mentum small, supported by a distinct gular peduncle; ligula and maxillæ exposed. Anterior coxæ sub-transverse, middle coxæ with distinct trochantin. Tibiæ all more or less dilated and fossorial. Tarsi short, spinous or setose beneath.

This tribe is here composed of the same genera included in it by Lacordaire, their partition in two tribes appearing rather unnecessary and hardly warranted by the differences exhibited.

The following table will aid in distinguishing our genera :

Antennæ slender, longer than the head.	PHALERIA.
Antennæ very short and clavate.	
Epistoma truncate.	TRACHYSCELIS.
Epistoma deeply emarginate.	ANÆMIA.

PHALERIA, *Latr.*

Phaleria, Latr., Hist. Nat. d. Crust. et. d. Ins. X, p. 300.

The antennæ of Phaleria though not absolutely slender, are so compared with those of the other two genera, the first six joints being obconical and longer than broad; the outer joints are usually more or less transverse and gradually broader. The epipleuræ are entire.

The species known in our collections may be distinguished by the following table, published by Dr. Leconte (New Species, p. 125).

Oval, finely punctulate species; antennæ with the outer joints transverse;

(metasternum normal, body winged).

Base of thorax finely margined.

Elytra not wider than base of thorax.

Margin of thorax and elytra with long hairs.

Robust species; surface sub-opaque.

Upper surface and legs testaceous. *rotundata.*

Body and legs black; margin of elytra testaceous. *limbata.*

Depressed species; color black, shining. *pilifera.*

Margin without hairs; color variable.

Sides of thorax converging from the base. *testacea.*

Sides of thorax parallel behind the middle. *longula.*

Elytra wider than base of thorax; color black. *picipes.*

Base of thorax not margined. *debilis.*

Small, rounded, strongly punctured species; antennæ with the outer joints

not testaceous; (metasternum short, body apterous).

Convex, testaceous, with black elytral spots. *globosa.*

Less convex, black, with red humeral spots. *humeralis.*

*P. rotundata*, Lec., Ann. Lyc. V, 148.

The under surface of this species is occasionally black, the upper surface testaceous, and when examined under a high power the thorax is found to be finely punctured and alutaceous. The interstrial spaces of the elytra, especially those nearest the suture, are finely transversely wrinkled.

Length .24 inch.

Found on the sea coast of California.

*P. limbata*, robust, sub-opaque, black, sides of thorax, margin and base of elytra dark testaceous. Thorax broader than long, convex, finely punctured, anteriorly emarginate, angles obtuse, sides rounded, base nearly truncate, angles obtuse. Elytra broadly oval, convex, striæ distinct, interstices finely transversely wrinkled. Body beneath black, legs piceous, coarsely punctured. Margin of thorax and elytra fringed with long hairs.

Length .25 inch.

Similar in form to the preceding, though rather more robust. The surface above is

entirely black, excepting the margin and base of elytra and an irregular space nearer the apical angle of the thorax, which are dark testaceous. The thorax above has four slight impressions, two basal and two on each side of the middle, the latter are probably accidental. The antennæ and legs are piceous.

One specimen from San Francisco.

*P. pilifera*, Lec., New Species, p. 125.

The thoracic and elytral margin are in this species fringed with hairs. It may be readily known from the preceding by its more elongate and depressed form and by its entirely black color.

Length .23-.28 inch.

From Cape St. Lucas, Lower California.

*P. testacea*, Say, Long's Expedition 2, 280.

The margin of the body is not fringed. The surface smooth and shining and testaceous in color. The elytra are sometimes ornamented with black spots. One specimen has the disc of the elytra entirely black, with only a narrow space at base and on the margins, testaceous.

Length .28-.30 inch.

Rather abundant on the Eastern coast.

*P. longula*, Lec., New Species, p. 125.

Length .22 inch.

From the Gulf coast, Mississippi Island.

*P. picipes*, Say, Long's Second Exp. II, p. 280; Am. Ent. Ed. Lec., I, p. 185.

Elongate oval, black, shining. Head finely and sparsely punctured. Thorax broader than long, moderately convex, very feebly and sparsely punctured and with a short linear longitudinal basal impression on each side; anteriorly emarginate, angles obtuse; sides feebly rounded, gradually narrowing to apex; base feebly sinuate. Elytra oval, moderately convex, wider at base than the thorax, with distinct striæ deeper at apex; interstices feebly punctulate. Beneath shining, black. Antennæ brownish.

Length .22-.28 inch.

From the southern and middle Atlantic coast.

*P. debilis*, Lec., New Species, p. 126.

Easily known by the pale color, single brown spot on each elytron, and by the absence of any marginal line at the base of the thorax.

Length .20-.24 inch.

Cape St. Lucas, Lower California.

*P. globosa*, Lec., Paci. R. R. R., App. 1, p. 51, pl. ii, fig. 4.

This and the following species differ from those which precede, in so many characters, that the establishment of a distinct genus seems almost necessary. They are both broadly oval and convex, rather coarsely punctured; antennæ longer than the head and thorax, slender and with the outer joints not transverse, meso- and metasternum short, and the elytra with the first stria parallel with the suture and no scutellar stria.

*P. globosa* is entirely testaceous, with two black marks on each elytron, the front being zigzag, the hinder irregularly triangular.

Length .12-.14 inch.

From the sea coast in the neighborhood of San Francisco.

*P. humeralis*, n. sp.

Similar in form to the preceding, but less convex. The color is black, somewhat bronzed, with a red humeral spot on each elytron.

Length .15 inch.

California (locality unknown).

*P. picta*, Mann., Bull. Mosc. 1843, 277. Sitkha; is unknown to me in nature.

#### TRACHYSCCELIS. Latr.

*Trachyscelis*, Latr., Gen. Crust. et Ins. IV, p. 379.

The form of antenna at once distinguishes *Trachyscelis* from *Phaleria*, and the truncate epistoma from *Anæmia*. In form the species resemble *Egialia*.

*T. flavipes*, Mels., Proc. Acad. III, p. 61.

The upper surface is black and shining, the elytra rather deeply striate and without scutellar stria. The under surface is paler and the legs yellowish.

Length .12-.14 inch.

From the southwestern Atlantic sea coast.

#### ANÆMIA, Cast.

*Anæmia*, Cast., Hist. Nat. Col. II, p. 218.

Head broad, deeply emarginate, sides rather broadly dilated. Eyes deeply emarginate, superior portion small. Mentum small, trapezoidal. Last joint of maxillary palpi elongate oval.

Antennæ short, robust, gradually thicker toward the tip, outer joints very transverse, last joint slightly longer than the preceding and rounded at tip. Thorax very transverse. Elytra as broad as thorax, and with entire epipleuræ. Legs short, robust, tibiæ all dilated, outer apical angle of all prolonged. Body winged.

I refer to *Anæmia*, an insect from California possessing all the characters assigned to the species of the Eastern Continent, with also a similarity of sculpture.



*A. californica*, oval, robust, piecous. Head broad, moderately convex, very densely and rather coarsely punctured. Thorax transverse, nearly three times as broad as long, convex, densely and coarsely punctured and fringed with long yellowish hairs; anteriorly emarginate, angles not prominent; base rounded, angles obtuse; sides strongly rounded, slightly narrower behind than in front. Elytra broadly oval, scarcely longer than broad, not broader at base than the thorax; base feebly emarginate; sides fringed with long yellowish hairs; surface rather densely, coarsely and very irregularly punctured. Under surface of body with few scattered punctures. Prosternum and legs with long yellow hairs. Body winged.

Length .16-.20 inch.

As compared with the figure of *A. sardou*, Gene, in Duval, pl. 70, fig. 350, our species is more robust, with a shorter thorax and with the sides much more strongly from the apex to base, the hind angles being very obtuse. The punctures are denser and coarser.

Occurs in Owens' Valley, Cal., and the adjacent regions of Nevada.

#### TRIBE XXVII—DIAPERINI.

Body usually oval or rounded, sometimes elongate (*Hypophlœus*). Eyes prominent, very feebly emarginate in front. Antennæ always with the outer joints thicker and perfoliate. Mentum small, gular peduncle distinct. Anterior coxæ sub-transverse; middle coxæ with distinct trochantin. Legs slender; spurs small; tarsi pubescent.

This tribe may be distinguished from those which precede by the very convex eyes, more prominent than the sides of the front, and from the *Bolitophagini* by the gula not being transversely sulcate.

Our genera may be divided into the following groups:

DIAPERES. Body broadly oval; eyes distinctly emarginate in front; pygidium covered.

First joint of hind tarsi not longer than the second. DIAPERIS.

First joint of hind tarsi equal to second and third. HOPLOCEPHALA.

First joint of hind tarsi longer than second and third.

Epipleuræ entire; intercoxal process of abdomen acute.

Mesosternum concave.

Last joint of maxillary palpi broadly triangular. PLATYDEMA.

Last joint of maxillary palpi elongate triangular,

outer side much longer. ALPHITOPHAGUS.

Mesosternum prominent. LIODEMA.

Epipleuræ short; intercoxal process of abdomen truncate. SCAPHIDEMA.

HYPOPHLÆI. Body cylindrical; eyes distinctly emarginate in front; pygidium exposed.

(One genus in this group). HYPOPHLÆUS.

PENTAPHYLLI. Body elongate oval; eyes not emarginate in front; pygidium covered.

Last five joints of antennæ forming a loose club. PENTAPHYLLUS.

DIAPERIS, *Geoff.*

Diaperis, Geoff., Ins. d. Envir. d. Paris, I, p. 337.

Two species of this well known genus occur in our fauna.

*D. hydni*, Fab., El. 2, 585; Lap. Ann. Sc. Nat. 23, 335; *maculata*, Oliv., Enc. Meth. 6, 273.

This species is remarkably uniform in its system of elytral coloration. The elytra are orange color, with a sutural black stripe, not reaching the scutellum, becoming irregularly wider toward the apex; a small black spot at the anterior third, not very distant from the suture, and another smaller, near the margin; a large irregular spot beginning at the margin behind the middle, extending toward the suture without attaining it, and becoming irregularly narrower. The head between the eyes is rufous. The legs entirely black.

Length .24 inch.

Abundant in the Middle and Eastern States, under bark or in fungi.

*D. rufipes*, oval, convex, shining; head entirely rufous; antennæ black except the three basal joints, which are rufous; thorax black, shining, finely and sparsely punctured. Elytra with distinct striæ of moderate punctures, interstices finely but very sparsely punctured; color black, with a basal and median transverse irregular band of orange, and an oval apical spot of the same color on each elytron; epipleuræ black except base. The legs are brownish, excepting the anterior femora and coxæ, which are pale orange.

Length .25 inch.

Found in Arizona, at Camp Grant, under Cottonwood bark.

The differences between this species and the European *D. boleti*, when viewed from above, are very slight, the system of coloration is identical, the differences being in the entirely rufous head and the pale legs, and by the interstices between the elytral striæ being much more sparsely punctured. The eyes are more closely approximate and the frontal region of the head narrower in our species.

HOPLOCEPHALA, *Cast. et Brullé.*

Hoplocephala, Cast. et Brullé, Ann. d. Sc. Nat. 23, p. 338.

Arrhenoplita, Kirby, Fauna Am. Bor., p. 235.

This genus differs from Diaperis in having the first joint of the hind tarsi longer than the second; and from the genera which follow, by the same joint being less than the two following together. The epipleuræ are abbreviated.

Our species are four in number, of which two only are known to American entomologists.

Head of male with two horns.

Thorax red, elytra green or blue, with metallic lustre.

*viridipennis*.

Thorax and elytra similar in color.

(Color blue; length 4 lines.

*chalybea*).

Color green; length  $1\frac{2}{3}$  lines.

*bicornis*.

Head of male simply tuberculate.

(Thorax ferruginous, elytra black.

*collaris*).

*H. viridipennis*, Fab., (Diaperis) Syst. El. II, 586, 4; Cast. et Brullé, (Oplocephala) Ann. d. Sc. Nat. 23, 340.  
In this species and the following, the head of the female is entirely devoid of tubercles.  
Length .10-.14 inch.

*H. bicornis*, Oliv., (Diaperis) Ent. 3, 55; Enc. Meth. 6, 273; Kirby, (Arrhenoplita) Fauna Bor. Am. 235;  
*fuscus*, Cast. et Brullé, (Hoplocephala) loc. cit. p. 341; *bicornis*, Fab., (Hispa) Mant. p. 215. -

This species differs from the preceding in having the whole surface bluish green. The thorax occasionally becomes brownish.

Length .10-.14 inch.

This and the preceding species are found rather abundantly over our entire country, living in fungi.

*H. chalybea*, Cast. et Brullé, Ann. Sc. Nat. 23, p. 341.

"Elongate, punctured, shining, bluish green; head of male with two vertical horns, female tuberculate; elytra moderately striate; body beneath blackish; legs brownish.

Length 4 lines, width  $1\frac{1}{4}$  lines.

From the neighborhood of Philadelphia."

Unknown to us. Probably not North American.

*H. collaris*, Cast. et Brullé, loc. cit. p. 347.

"Elongate, punctured, shining, dark ferruginous; head at middle bituberculate, mouth and antennæ brownish; thorax reddish brown, scutellum red; elytra faintly striate, black; with the base, humeri and anterior portion of suture brownish; legs pale ferruginous.

Length  $2\frac{1}{2}$  lines, width  $1\frac{1}{4}$  lines.

From the neighborhood of Philadelphia."

Unknown to us.

#### PLATYDEMA. *Cast. et Brullé.*

*Platydema*, Cast. et Brullé, Ann. Sc. Nat. 23, p. 350.

First joint of hind tarsi longer than the two following joints; epipleuræ entire; mesosternum concave; last joint of maxillary palpi broadly triangular, with the inner and outer sides nearly equal; intercoxal process of abdomen triangular, acute.

These characters will serve to distinguish this genus from all those before mentioned and those which follow.

Our species are numerous and may be distinguished by the following table:

Head tuberculate or horned; front concave.

Polished or shining species.

Black, broadly oval.

*excavatum*.

Blue, more elongate.

*cyaneus*.

Opaque species.

*erythrocerum*.

Head neither tuberculate nor horned.

Thorax rufous, elytra black.

ruficollis.

Thorax and elytra black.

Surface opaque.

Elytra without red spots.

Antennæ pale.

ruficornis.

Antennæ black, three basal joints pale.

flavipes.

Antennæ black, three basal pale, terminal ferruginous.

janus.

Elytra with an oblique red spot on each.

ellipticum.

Surface shining black.

Prosternum horizontal, apex prominent.

Head with distinct transverse groove and frontal impression.

Frontal impression rather deep; species broader. oregonense.

Frontal impression faint; species less rounded. americanum.

Head without transverse impression.

Thorax very sparsely punctured; surface less shining.

laevipes.

Thorax densely punctured; species small, shining, black.

micans.

Prosternum convex between the coxæ; apex deflexed and obtuse.

Smaller species, black, with an æneous tinge, more elongate. picilabrum.

Larger species, black, more broadly oval.

subcostatum.

*P. excavatum*, Say, (Diaperis) Journ. Acad. 3, 267.

A very abundant species over the entire district East of the Rocky Mountains; easily recognisable by the black color, shining surface and corniculate head. Specimens occur in the Western States of rather more elongate form and less deeply striate elytra.

Length .18-.21 inch.

*P. cyanescens*, Lap. et Brullé, Ann. Sc. Nat. XXIII, p. 356.

Differs from the preceding, in its more elongate form, less rounded sides and by its blue color.

Length .18 inch.

Occurs in the Gulf States.



*P. erythrocerum*, Lap. et. Brullé, loc. cit., p. 355.

Broadly oval, opaque, under surface and antennæ brownish.

Length .15 inch.

Occurs in the Gulf States.

*P. ruficollis*, Lap. et Brullé, loc. cit., p. 375; *sanguinicollis*, Mels., Proc. Acad. 3, 61.

A small oval sub-opaque species with a rufous thorax, and black elytra with apices paler; the body beneath, legs and antennæ brownish ferruginous, the latter being paler.

Length .20 inch.

Middle States, rare.

*P. ruficornis*, Sturm. (Diaperis) Catal. ed. 1826, p. 68, tab. 3, fig. 21. *ruficentre*, Lap. et Brullé, (Plat.) p. 378; *auralis*, Hald., J. Ac. Ser. II, Vol. I, p. 101; *rufa*, Mels., (Neomida) Proc. Acad. 3, 61. ? *pallens*, Lap. et Br., loc. cit.

Very broadly oval, opaque black, under surface and legs dark testaceous, antennæ entirely pale. *P. rufa*, Mels., is but an immature specimen, as is probably the *pallens* of Lap. and Brullé.

Length .16-.22 inch.

A species of wide distribution.

*P. flavipes*, Fab., (Mycetophagus) Syst. El. II, 567, 11; Lap. et Brullé, loc. cit. 588; *basalis*, Hald., J. Acad. Ser. II, Vol. I, p. 101.

Similar to the preceding species, but more elongate, and with the antennæ black except the three basal joints, which are testaceous. The thorax is very feebly and sparsely punctured at middle, while at the sides the punctures are not only denser but coarser, differing in this respect from the preceding species, in which the thorax is scarcely more punctured toward the margin than at the middle. The under side of the body and legs are pale brownish.

Length .16-.20 inch.

Middle and Southern States.

*P. janus*, Fab., (Mycetoph.) Syst. El. II, 566, 4; Lap. et Brullé, loc. cit., p. 372; Zimmerman msect.

At the suggestion of the manuscript of the late Dr. Zimmerman, I refer to this species our largest opaque black species, heretofore considered *flavipes*. The description of the latter corresponds exactly with that described by Haldeman some years after as *basalis*. Janus differs from *flavipes* in having the terminal joint of the antennæ ferruginous, and by the thorax being regularly, sparsely and finely punctured. The under surface and legs are pale ferruginous.

Length .24-.30 inch.

From the Southern States, California, Arizona, and New Mexico. The types were from Peru.

*P. ellipticum*, Fab., (Mycet.) Syst. El. II, 566, 3; (Tenebrio) supplement, 19, 15; (Platydema) Lap. et Brullé, loc. cit. 380.

The body, antennæ and legs are entirely black, and the elytra have an oblique red spot from the humerus backward and inward toward the suture. The margins of the spot are irregular.

Length .22-.30 inch.

Abundant in the Southern States, rarely found in Pennsylvania.

*P. oregonense*, Lec., Pacif. R. R. Rep. IX, App. I, p. 51.

This species is very closely allied to the following, and it is doubtful whether they should be retained as distinct. The only differences being in the rather rounder form and deeper frontal impression of this species. Should these two prove to be identical, its distribution would prove nearly as extended in the Northern regions as *janus* in the Southern. Oregonese is always brownish in color, never black; the antennæ are pale; the prosternum horizontal, tip acute and prominent.

Length .20-.26 inch.

Distributed from Oregon to Fort Tejon, Cal.

*P. americanum*, Lap. et Brullé, loc. cit. 358.

This species has heretofore borne the name of *subcostatum*, Lap., in our collections, and has been so distributed. The differences between it and *oregonense* have already been adverted to.

Length .20-.26 inch.

Abundant in the Northern States and Canada.

*P. lævipes*, Hald., J. Acad., Series II, Vol. 1, p. 101.

Differs from both the preceding, in having the front convex, without any transverse or intra-ocular impression. The prosternum is likewise prominent and horizontal. The surface is less shining than either of the preceding, and while the thorax and head are black the elytra are brownish. The antennæ are pale brown and the legs ferruginous.

Length .20-.26 inch.

Middle and Southern States.

*P. micans*, Zimmerman msept.

"Broadly oval, of the form of *ruficollis*, black, very shining, with a blackish submetallic lustre to the elytra, with the sides toward the apex brownish; antennæ, palpi and legs reddish brown; head rather densely and coarsely punctured, thorax rather densely but less coarsely punctured, with two feeble impressions along the basal margin; elytra with striae of rather large punctures, with the interstices rather densely and finely punctured; beneath with moderately large punctures."

Length .12 inch.

South Carolina. Dr. Chas. Zimmerman.

This species resembles in size, color, form and general appearance the female of *excavatum*, Say, though readily distinguishable by the absence of horns or tubercles. The scutellar stria is almost totally obliterated and replaced by a single larger and many small irregularly placed punctures. The prosternum is horizontal, acute and produced behind, and rather more deeply received in the mesosternum than usual.

The above description and the substance of the remarks are drawn from the manuscript of the late Dr. Zimmerman, of Columbia, South Carolina. It is greatly to be regretted that these were not published in full at the date of their origin, as many valuable suggestions are found, now unfortunately for him forestalled by later students. That Dr. Zimmerman, even with a limited cabinet and library, was fully equal to and in many respects in advance of his cotemporaries, there can be no doubt.

*P. picilabrum*, Mels., Proc. Acad. 3, 61.

This species and the next have the prosternum between the coxæ very convex, and the apex depressed, obtuse and not prominent. In both the labrum is testaceous and the antennæ and legs ferruginous. This species has more deeply striate elytra with an æneous tinge, the form is also more slender and parallel.

Length .20 inch.

Eastern, Middle and Western States.

*P. subcostatum*, Lap. et Brullé, loc. cit. p. 362; *clypeatum*, Hald., Journ. Acad., Ser. II, Vol. 1, p. 101.

One of our largest and most abundant species in the Eastern and Middle States. Easily known by the characters given in the table. The species has been considered *americanum*, but the possession of an authentically determined specimen of the present species has enabled me to determine the identity of Haldeman's species, as well as fix the value of those otherwise labelled.

Length .22-.26 inch.

Unknown species.

*P. politum*, Lap. et Brullé, loc. cit. p. 361.

From the description this species does not differ from some specimens of *americanum*, now before me.

Length 3.5 lines, breadth 2 lines.

From Philadelphia.

*P. pallens*, Lap. et Brullé, loc. cit. p. 377.

Probably an immature form of *ruficornis* or possibly of *janus*.

Length 3, breadth 2 lines.

From North and South America.

*P. cyanea*, Lap. et Brullé, loc. cit. p. 392.

From the description it is fairly inferable that this species is but the female of one belonging to the group in which the head of male is corniculate. It and the two preceding species are, however, not known to me, and the matter is left with the few suggestions to future students.

Length 2, breadth 1 line.

From North America.

#### ALPHITOPHAGUS, *Steph.*

*Alphitophagus*, Steph., *Illust. of Brit. Ent.* V, p. 12.

A genus easily recognisable in the form of the second and last joints of the palpi. The epipleuræ are entire, the prosternum not produced, the first joint of the hind tarsi equal to the second and third together, but shorter than the last.

*A. bifasciatus*, Say, (*Diaperis*) *Journ. Acad.* III, 268, 1823; *quadripustulatus*, Steph., loc. cit., pl. 24, fig. 1, 1832.

Easily known from all our species of *Diaperini*, by the small size, elongate oval form and system of coloration. The general color is reddish brown, the elytra being darker, The latter have two yellow bands on each, one near the humerus and slightly oblique, another behind the middle and transverse, not reaching the suture, and an elongate oval spot near the apex.

“The males are remarkable in the curious structure of the head. The epistoma is deeply and bisinately impressed along its posterior border, slightly impressed in the middle and elevated on each side; the front has also three deep grooves forming two longitudinal ridges, well marked and terminating between the eyes. They are also smaller than the females.”—(Duval).

Length .08–.10 inch.

Not rare in the Middle States and Dist. Columbia. Occasionally found in colonies of twenty or more. As this insect is very rare in Europe, it has probably been introduced.

#### LIODEMA, *Zimm.*

*Liodema*, Zimm., MS. *Tenebrionidæ*.

Closely allied to *Platydema*, but differs in having the mesosternum prominent and not emarginate. Prosternum convex between the coxæ, apex deflexed and received, when the thorax is depressed, beneath the mesosternum. The rest as in *Platydema*.

*L. læve*, Hald., (*Platydema*) *Journ. Acad.*, Ser. II, Vol. 1, p. 101 (*Liodema*) Zimm. MSS. No. 3259.

Oval, convex, smooth, moderately shining; color piecous black, with the apex of elytra paler, beneath reddish brown; mouth, antennæ and legs reddish yellow; head and thorax



regularly convex, with very fine sparsely placed punctures; epistoma and margins of thorax brownish; elytra with faint striæ of very fine punctures; body beneath smooth, shining, very sparsely punctured.

Length .16 inch.

North Carolina, Dr. Chas. Zimmerman.

#### SCAPHIDEMA, *Redt.*

Scaphidema, Redt., Fauna Austr. ed. 1, p. 591.

Nelites, Lec., Agass. Lake Super., p. 232.

This genus may be distinguished from *Platydema* by its truncate intercoxal process and short epipleuræ. The mesosternum is less prominent, less deeply excavated than any of the genera except *Alphitophagus*. The thorax is narrower at base than the elytra, the sides not rounded except in front, and gradually wider from apex to base.

*S. æneolum*, Lec., (*Nelites*) loc. cit.; Lac., (*Scaph.*) Genera V, p. 304.

As compared with the European species, this one is more elongate, less rounded and with a narrower thorax.

Length .14-.18 inch.

From the Lake Superior region.

#### HYPOPHLEUS, *Fab.*

Hypophleus, Fab. in Schneid. N. Mag. Ent., p. 24.

Easily known by its sub-cylindrical form, thicker antennæ and rather broader tibiæ. The epipleuræ are short.

Three species represent this genus in our fauna.

Thorax regularly convex.

Thorax emarginate in front; angles distinct. parallelus.

Thorax truncate in front; angles obtuse. thoracicus.

Thorax depressed, with a broad longitudinal excavation.

Thorax truncate in front; angles obtuse. cavus.

*H. parallelus*, Mels., Proc. Acad. 3, 63.

Rufous, parallel. Thorax emarginate in front.

Occurs from Canada (Pettit) to Arizona.

*H. thoracicus*, Mels. Proc. Acad. 3, 63.

Head and thorax rufous, elytra dark brown or black. Thorax anteriorly truncate, angles obtuse.

Occurs from Canada to Georgia.

*H. cavus*, Lec., New Species, p. 129.

Head and thorax rufous, elytra blackish, with long hairs. Abundantly distinct in the broad thoracic groove.

Length .15 inch.

Occurs in Kentucky.

#### PENTAPHYLLUS, Latr.

*Pentaphyllus*, Latr., Regne Animale ed. 2, p. 30.

*P. pallidus*, Lec., New Species, p. 126.

"Belongs to the same division as the European *P. testaceus*, having the epistoma broadly rounded, and the anterior tibiæ not dilated; it differs in having the body beneath testaceous." The color of the body is entirely testaceous above and beneath.

Length .10 inch.

Abundant in Canada West; collected by Mr. Johnson Pettit.

*P. californicus*, n. sp.

Similar to *pallidus* in form, color and sculpture, differing in being more depressed and with the centres of the first two abdominal segments brown, almost black.

Length .09 inch.

Fort Crook, Cal.

Since the publication of the description of the preceding species, I have been enabled to examine a large series of specimens, through the kindness of Mr. Pettit of Grimsby, Ontario. The males of *pallidus* are very distinctly bituberculate on the front between the eyes, and are usually larger than their females. The head of the female is very convex in *pallidus*, but in *californicus* there is an increase of the convexity in the place of the tubercles of the male. The unique in the cabinet of Dr. Leconte at the time of the description of *pallidus* was a female, hence the failure to note the above character, which will serve additionally to separate our species from the European. From the figure given by Duval, *P. testaceus* is much more acute behind than either of our species, which are very obtuse and alike in both sexes.

#### TRIBE XXVIII—BOLITOPHAGINI.

Last joint of palpi not securiform. Head short, deeply inserted. Epistoma semi-circular in front. Antennæ partly received, in repose, in a transverse gular groove between the eyes. Outer joints of antennæ perfoliate, rarely pectinate. Scutellum distinct. Anterior coxæ sub-cylindrical. Tibiæ simple, spurs small or absent. Tarsi short, feebly pubescent beneath, usually compressed, with the first joint usually very small, last joint long

Our genera are four in number, as follows:

Sides of head in front of eyes prominent.

Eyes partially divided; antennæ ten-jointed. BOLITOTHERUS.

Eyes entirely divided; antennæ eleven-jointed. BOLITOPHAGUS.

Sides of head in front of eyes not prominent.

Eyes distinctly emarginate; thorax margined; margin crenulate. ELEDONA.

Eyes not emarginate; thorax not margined. RHIPIDANDRUS.

### BOLITOTHERUS, *Candeze*.

*Bolitotherus*. Candeze.

*Phellidius*. Lec., Class. Col. N. A., p. 236.

*B. cornutus*, Fab., (*Boletophagus*) Syst. El. 1, p. 112; Panzer, (*Opatrum*) Fauna Amer. Bor. Prodrom., pl. 1, fig. 5 and 6, ♂ and ♀; *bifurcum*, Fab., (*Opatrum*) Ent. Syst. Supp. 40, 1.

This insect is easily known. The males have two horns, slightly curved and broader at tip, projecting forward from the thorax. The anterior margin of epistoma has a very short horn, bifid at tip.

Length .40-.45 inch.

Occurs abundantly everywhere in the middle belt of States.

This species appears to be in an unfortunate condition in its synonymy. It appears to have been originally described by Fabricius as *Opatrum bifurcum* (Ent. Syst. Supp. 40, 1), subsequently by Panzer as *O. cornutum* (Prod. loc. cit.) All subsequent authors appear to have adopted for our insect the name of Fabricius, *Trox cornutus*, (Ent. p. 88) and repeated verbatim in his Syst. Eleut. I, p. 112, referring to an insect from Ceylon. In Syst. El. I, pp. 112 and 113, Fabricius adopts the name of Bolitophagus, and changes without any reason the specific name *bifurcus* to *cornutus*, and refers the insect to Carolina. In a notice of some coleopterous larvæ (1861, p. 43), Candeze at the suggestion of Lacordaire, establishes the genus *Bolitotherus* and adopts the specific name *cornutus*, referring to Syst. El. p. 112, on which are two species of this name, and although stating that the perfect insect is well known, Candeze does not state whence it comes. To render the matter still more confused, Harold (Cat. p. 1945) refers *Opatrum bifurcum*, Pz., (*cornutum*, Fab.) to Bolitophagus, and the *Trox cornutus*, Fab., of Ceylon, to Bolitotherus. The whole truth is that our large species is a Bolitotherus, whether the specific name be *bifurcus* or *cornutus*. It is to be desired that this confusion may be rectified. From my own study I am inclined to adopt the synonymy as given by Harold (Catal. 1944 and 5), with the removal of the *B. bifurcus*, Fab., (*cornutus*, Panz.) from Bolitophagus to Bolitotherus. Such a change compels us to drop a very well known specific name, adopting another almost entirely lost sight of.

BOLITOPHAGUS, *Illiger*.

*Bolitophagus*, Illiger, *Die Käfer Preuss.*, p. 100.

Eyes entirely divided, sides of head prominent. Antennæ eleven-jointed.

*B. corticola*, Say, *Journ. Acad.* V, 238.

The margin of thorax is strongly crenulate and deeply notched in front of the hind angles. The surface is covered with numerous tubercles and the elytra ornamented with widely interrupted elevated ridges.

Length .33 inch.

Occurs in the Middle and Eastern States.

*B. depressus*, Randall, (*Eledona*) *Bost. Journ.* II, 21; *tetraopes*, Newman, (*Bolet.*) *Ent. Mag.* V, 378.

Differs from the preceding, in having the thorax simply coarsely punctured, with the sides regularly rounded and margin scarcely crenulate. The elytra are finely costate, the interstices having a single row of coarse punctures.

Length .20-.30 inch.

Middle and Eastern States and Canada.

ELEDONA, *Latr.*

*Eledona*, Latr., *Precis d. car. gen. d. Ins.*, p. 19.

Differs from the preceding genera, in not having the sides of the head prominent in front of the eyes. The eyes are about half divided. Front rounded, not prominent at middle. Antennæ clavate and compressed. Thorax distinctly margined, margin finely crenulate.

*E. fungicola*, brown, opaque, oval, sub-cylindrical. Head densely and coarsely punctured. Thorax broader than long, very rugosely punctured, convex, anteriorly feebly emarginate, base bisinuate, sides feebly rounded, gradually wider behind. Elytra convex, broadly rounded at apex, base feebly emarginate, surface finely costulate, interstices with a single row of coarse punctures. Beneath dark brown, coarsely punctured, antennæ and legs paler.

Length .14 inch.

Middle States. Closely resembling *E. agaricicola* of Europe.

This insect has been associated in collections with the next as its female, the differences appear to me to warrant its separation as a species of this genus. The characters are all those of *Eledona*.

RHIPIDANDRUS, *Lec.*

*Rhipidandrus*, Lec., *Class. Col. N. A.*, 236.

*Rhipidandrus* differs from *Eledona* in having the eyes larger, more convex, more coarsely granulated, and not emarginate by the sides of the front. The front is narrow, epistoma rather prominent, and truncate at middle. The antennæ are pectinate from the fifth to last joints, the fifth joint with a shorter branch than those which follow. The thorax is without flattened and crenulate margin.



*R. flabellicornis*, Sturm, (*Xyletinus*) Cat. 1826, p. 59, pl. 1, fig. 7.

I have before me ten specimens of this insect, and find them all agreeing with the characters of the genus as defined by Dr. Leconte, and showing no differences among themselves in the formation of their antennæ. The species is similar in sculpture to the *Eledona* before described. The antennæ and legs are pale reddish brown.

Length .10 inch.

Middle and Western States and Canada West (Pettit).

May not this genus be allied to the *Eutomides*, lately referred to this family?

#### TRIBE XXIX—APOCRYPHINI.

Body slender, apterous; head not constricted behind; labrum prominent, clypeal membrane distinctly visible; eyes small, emarginate, coarsely granulated; mentum small; last joint of maxillary palpi strongly securiform; antennæ eleven-jointed, slender, scarcely thicker externally; prothorax globose, marginal ridge rounded or wanting; trunk pedunculated; elytra embracing widely the flanks of abdomen; epipleuræ narrow; middle coxæ without trochantin; hind coxæ small, widely separated; legs long, femora clavate; tibiæ slender, spurs small; tarsi pubescent with long hairs; hind margins of third and fourth ventral segments coriaceous.

The last character alone serves to remove this tribe from the association in which it was placed by Dr. Leconte, to the place assigned it by Lacordaire, preferring, however, to retain it as a distinct tribe.

#### APOCRYPHA, *Esch.*

*Apocrypha*, *Esch.*, Zool. Atl. IV, p. 13.

Our species, three in number, all small, are found in California, under chips, etc., in very dry places; they are very agile and difficult to capture.

*A. anthicoides*, *Esch.*, loc. cit., pl. 18, fig. 7.

Thorax globoso-oval, broader than long; broader in front of middle, sides strongly rounded and gradually narrower toward apex. Surface rather coarsely but sparsely punctured, and very sparsely clothed with yellowish hairs. Color brownish testaceous, elytra blackish, base broadly brownish testaceous. Beneath colored as above, legs paler.

Length .11 inch.

San Francisco and Tejon, Cal.

*A. dyschirioides*, *Lec.*, Ann. Lye. V, 137.

Smaller than the preceding. Head and elytra dark brown or black, thorax rufous, shining. Thorax longer than broad, sides nearly straight in front, gradually widening beyond the middle, then rapidly narrowing. Under surface blackish, feet rufous.

Length .08–.10 inch.

Found with the preceding.

*A. elivinoides*, brownish testaceous, sub-opaque. Thorax more densely punctured and more densely pilose, broader than long, sub-globose, slightly depressed, sides moderately rounded from apex to base; base rounded. Elytra elongate oval, sub-depressed, sides feebly rounded, apex obtuse, surface moderately coarsely punctured and sparsely clothed with short yellowish recumbent hairs. Beneath testaceous, rather densely and coarsely punctured and sparsely pilose.

Length .14 inch.

Owens' Valley, California, rare.

Differs from both the preceding species, by its color, more depressed form, and by the shape of the thorax. In this species the sides are gradually rounded from the apex to base, and the base is not prolonged as in the other species, and is comparatively broader. The elytra are less convex, more elongate, sides less rounded, and apex less acute.

#### TRIBE XXX—HELOPINI.

Labrum prominent, clypeal membrane always visible; last joint of palpi securiform; head usually more or less prolonged behind the eyes; antennæ with the outer joints flattened sub-triangular; last joint usually longer than the preceding; elytra feebly embracing the body; epipleuræ entire; legs usually long; anterior coxæ globular; tibial spurs frequently very small; tarsi densely pubescent beneath, the anterior and often the middle dilated in the males; intercoxal process broad or oval, never acute at tip; body either apterous or winged.

#### HELOPS, *Fab.*

*Helops*, *Fab.*, *Ent. Syst.*, p. 357.

One genus represents this tribe in our fauna. Our species are numerous and may be divided in the following manner:

##### GROUP I—Alate Species.

Thorax sub-quadrate, sides feebly rounded; apex (except in *impolitus*) emarginate; angles all prominent.

Thorax emarginate at apex; elytra sub-metallic; shining.

Sides of thorax not undulated; elytra finely striate, interstices finely and sparsely punctured.

*micans.*

Sides of thorax undulated; elytral striæ deeper.

*undulatus.*

Sides of thorax not undulated; elytral striæ deep; interstices convex, almost entirely impunctured.

*venustus.*

Thorax truncate in front; angles rectangular; surface sub-opaque; elytra with rows of elongate punctures.

*impolitus.*

Thorax usually broader than long; sides moderately rounded; apex truncate or rounded, with obtuse angles.

Antennæ with the outer joints compressed and sub-triangular. (Black, sub-opaque, California species.)

Thorax narrowed at base.

*opacus.*

Thorax wider at base,

*punctipennis.*

Antennæ slender, outer joints not compressed.

*rugulosus.*

Thorax obtusely margined.	
Brownish; last joint of antennæ shorter.	<i>angustus.</i>
Brownish; last joint of antennæ longer than tenth.	<i>gracilis.</i>
Thorax acutely margined.	
Margin narrow.	
Propleuræ finely longitudinally wrinkled.	<i>californicus.</i>
Propleuræ coarsely and irregularly wrinkled.	<i>edwardsii.</i>
Margin broad, more or less reflexed.	
Thorax broadest at middle.	<i>pernitens.</i>
Thorax broadest at base.	<i>latus.</i>
GROUP II—Apterous Species.	
Antennæ short, robust, outer joints compressed.	<i>rugicollis.</i>
Antennæ longer than head and thorax.	
Sides of thorax rounded.	
Apex of thorax truncate.	
Thorax broader than long.	
Hind angles obtuse or rounded.	
Terminal joints of antennæ sub-cylindrical, last joint long; interstitial spaces with rounded tubercles, distinct at least at apex.	<i>bachei.</i>
Terminal joints of antennæ sub-triangular, last joint short oval; interstitial spaces flat.	<i>convexus.</i>
Hind angles nearly rectangular.	
Elytra with striae of fine punctures.	
Propleuræ grooved.	<i>aerens.</i>
Propleuræ coarsely punctured.	
Last joint of antennæ longer than tenth.	<i>cisteloides.</i>
Last joint of antennæ shorter than tenth.	<i>discretus.</i>
Elytra deeply striate.	<i>sulcipennis.</i>
Thorax longer than broad.	
Form slender; joints four to eleven of antennæ sub-equal.	<i>attenuatus.</i>
Apex of thorax emarginate; angles prominent.	
Form broadly oval; elytra deeply striate.	<i>factus.</i>
Sides of thorax sub-angulate in front of middle.	
Apex truncate; antennæ slender; form broadly oval.	<i>tumescens.</i>

*H. micans*, Fab., Syst. El. 1, 157; *cittatus*, Oliv., 3, 4; *teniatus*, Beauv. Ins., p. 121, pl. 30, fig. 4.

Our largest Eastern species. Thorax emarginate in front, angles distinct, broader than long, somewhat broader at base, sides feebly sinuate. Antennæ slender, outer joints feebly compressed; last three joints smaller and gradually decreasing. Elytra faintly striate, shining with indistinct metallic stripes. Propleuræ coarsely and confluent punctured. Apex of last ventral segment with a broad hairy depression; in the females the depression is longitudinal and smaller.

Length .50-.70 inch.

A species of wide distribution.

*H. undulatus*, Lec., New Species, p. 132.

Similar to the preceding. Differs in the undulate sides of thorax and the absence of

any depression in the last abdominal segment. The terminal joints of the antennæ are less compressed and not shorter. The antennæ, as in most of the species of the genus, are shorter in the female.

Length .46-.53 inch.

Southern States.

*H. venustus*, Say, Long's Exped. 2, 283.

Smaller than either of the preceding. The sides of the thorax are nearly straight, the propleuræ coarsely but not confluent punctured, and the elytra deeply striate, with convex interstices. Antennæ slender and as in *undulatus*.

Length .36-.38 inch.

Not abundant in the Middle and Southern States.

*H. impolitus*, Lec., New Species, 132.

Thorax nearly square, sides nearly straight, apex very feebly emarginate. Elytra with striæ of coarse punctures. Color black, slightly bronzed, sub-opaque. Antennæ slender. Propleuræ rugosely punctured, punctures behind confluent in grooves. Last segment of abdomen concave and hairy at apex.

Length .50 inch.

Texas. One male in my own cabinet, and a female in that of Mr. Ulke.

*H. opacus*, Lec., Proc. Acad. 1859, 234.

Thorax truncate in front, angles rounded; base almost truncate, angles rectangular; sides rounded in front, slightly sinuate and converging behind; surface opaque black, rugosely punctured. Three terminal joints of antennæ shorter, compressed, broader than long. Propleuræ coarsely and rugosely punctured. Two forms of this species occur, one apterous, the other winged. In the apterous form the thorax is more convex, the elytra more robust, convex and shorter. The winged species has the elytra depressed, more elongate and less rounded on the sides; the thorax is also less convex, rather broader and with less rounded sides. I am unwilling at present to assign a distinct name to the latter form, desiring a further accumulation of specimens.

Length .52-.70 inch.

From San Francisco, Cal.

*H. punctipennis*, Lec., New Species, 133.

Similar in form to the preceding, but more depressed and smaller. Thorax slightly broader than long; disc densely but not rugosely punctured, sides rounded in front, slightly sinuate behind, base truncate, angles slightly acute, more prominent in any other of our species. The elytra are depressed, slightly broader behind, moderately striate,



interstices densely punctured and slightly rugose. Antennæ long, with the outer joints compressed, very gradually shorter.

Length .36 inch.

California.

*H. rugulosus*, Lee., Ann. Lyc. V, 151.

A large sub-opaque black species, differing from all our other alate species in having the outer joints of the antennæ compressed and shorter, and the thorax broader behind. The thorax is broader than long, truncate at apex and base, sides rounded, gradually converging to the apex. The propleuræ are finely grooved near the margin and coarsely punctured near the coxæ. The elytra are finely striate, the interspaces transversely wrinkled and finely punctured.

Length .38-.64 inch.

California, near San Francisco.

*H. angustus*, Lec., Proc. Acad. 1859, 77.

Brownish, not metallic. Thorax as long as broad, truncated in front and behind, sides moderately rounded, disc feebly convex. Antennæ elongate, outer joints not compressed, very slightly shorter. Propleuræ coarsely punctured. Thorax without thin margin.

Length .30-.40 inch.

Fort Tejon, California.

*H. gracilis*, Bland, Proc. Ent. Soc. 1863, p. 319.

Bronzed, sub-parallel, moderately depressed. Thorax not margined, broader than long, truncate at apex and base, sides feebly rounded, anterior angles broadly rounded, hind angles rectangular. Propleuræ coarsely and irregularly grooved. Antennæ slender, last joint longer than the preceding.

Length .30-.35 inch.

New Jersey, Bland.

*H. californicus*, Mann., Bull. Mosc. 1843; Beitrag, p. 287.

Similar in form to *gracilis*, but rather more depressed and somewhat broader. The surface is brownish or piceous, shining, but rarely sub-metallic. Thorax rather more transverse and with a distinct margin, more evident near the hind angles. The propleuræ are very finely wrinkled. The antennæ are slender, the outer joints feebly compressed, sub-equal, the last joint broadly oval, equal with the preceding. The elytra are feebly striate, the interstices flat, smooth and very sparsely punctured.

Length .26-.42 inch.

San Jose, California.

*H. edwardsii*, piceous with slight aeneous tinge. Head coarsely and rather densely punctured. Thorax broader than long, moderately convex, rather finely punctured and more densely at the sides; apex sub-truncate, base feebly rounded at middle, sides rounded in front, slightly sinuate and feebly narrower at base, margin acute, not broad, apical angles obtuse, hind angles rectangular. Propleuræ coarsely and irregularly wrinkled and punctured, mesosternum coarsely punctured. Elytra oblong; feebly broader behind middle, sides feebly rounded; surface moderately convex, rather deeply striate, striæ not punctured, interspaces feebly convex and sparsely punctulate. Body beneath coarsely but not sparsely punctured, abdomen more densely punctured and at the sides wrinkled.

Length .62 inch.

Resembles a large specimen of *californicus*, from which it may readily be distinguished by the form of the thorax and the sculpture of the propleuræ. The elytra are also much more deeply striate. The antennæ are broken, but they appear to be as in *californicus*.

For a single female specimen I am indebted to Mr. H. Edwards, of San Francisco, to whom I with pleasure dedicate it.

Collected in Oregon.

*H. pernitens*, Lec., Proc. Acad. 1861, p. 353.

Thorax one-half broader than long, apex and base of equal width, the former truncate, the latter feebly rounded; sides rounded, very distinctly margined, margin slightly reflexed. Antennæ slender, outer joints very feebly decreasing, last joint elongate, somewhat longer than the tenth. Elytra rather broadly oval, finely striate, surface smooth and polished. Propleuræ finely wrinkled.

Length .40 inch.

Oregon.

*H. lætus*, Lec., Proc. Acad., Pacif. R. R. Rep. IX, App. 1, p. 51.

Thorax as in *californicus*, but rather more transverse. Margin broad, slightly reflexed and broader than the hind angles. —Antennæ with sub-equal joints, last joint rounded and smaller than the tenth. Propleuræ finely rugose. Elytra less rounded than in *pernitens*, more deeply striate, and with the interstices feebly convex. Surface smooth, shining, cupreous metallic.

Length .32 inch.

Oregon.

*H. rugicollis*, Lec., New Species, p. 133.

With this species begins our series of apterous *Helops*. The very short robust antennæ serve to distinguish this species from those to which it has most resemblance in form and other characters. The antennæ are not longer than the head and thorax, robust, outer joints compressed, last three shorter; joints nine and ten sub-triangular, broader than long, last joint oval and shorter. The head and thorax are rather densely aciculate punctured, and reddish brown. Thorax slightly broader than long, apex trun-

cate, base feebly rounded, hind angles distinct, not rounded. Elytra elongate oval, humeri rounded, color piceous. Propleuræ coarsely punctured. Legs ferruginous.

Length .40-.46 inch.

Specimens in my cabinet from Tejon and Owens' Valley, California.

*H. baehnei*, Lec., Proc. Acad. 1861, 353.

Thorax slightly broader than long, sides strongly rounded, apex truncate, base slightly rounded, hind angles very obtuse or rounded. Antennæ slender, last joint longer than the preceding. Elytra elongate oval, with striæ of punctures faintly marked, interstices sparsely punctured and with slightly elevated rounded tubercles evident at least near the apex. Propleuræ with confluent reticulate punctures. Surface sub-opaque, faintly bronzed.

Length .34-.50 inch.

Island of Santa Barbara, coast of California.

*H. convexulus*, Lec., Proc. Acad. 1861, p. 353.

Thorax similar to the preceding, with less rounded hind angles. The surface is shining, not metallic. Elytra elongate oval, convex, faintly striate, interstices flat, very sparsely punctured. Antennæ slender, outer joints gradually decreasing, last joint oval, not longer than the preceding. Propleuræ finely wrinkled. Easily distinguishable from the preceding species, the only one with which it might be confounded by description, by its more convex form, shining surface and absence of any interstitial tubercles.

Length .22-.30 inch.

Bitter Root Valley, Nebraska.

*H. æreus*, Germar, sp. nov. p. 159; *aratus*, Say, Journ. Acad. 5, 240; *pallus*, Say, Journ. Acad. 5, 241.

A common species in the Eastern States, easily recognisable by the characters given in the table and by the very deeply grooved propleuræ. The last three joints of antennæ are shorter and sub-equal.

Length .28-.36 inch.

Abundant in the Middle States.

*H. cisteloides*, Germar, Spec. Nov. p. 159.

The thorax is somewhat broader than long, the hind angles rectangular. Propleuræ coarsely punctured. Elytra elongate oval, bronzed, with striæ of fine punctures, interstices flat, impunctured. Antennæ slender, last joint longer than the preceding.

Length .40-.50 inch.

Gulf States.

*H. discretus*, Lec., New Species, p. 134.

This species is unknown to me in nature, and is placed near *cisteloïdes* in consequence of its comparison by Dr. Leconte with that species.

Length .44 inch.

Texas. Cabinet of Mr. H. Ulke.

*H. sulcipennis*, Lec., New Species, p. 133.

A very distinct species in this section, by its deeply sulcate elytra. The interstices are convex, smooth and shining with metallic reflection. The antennæ are slender, the joints nearly equal, the last being as long as the preceding. The propleuræ are punctured and wrinkled. The humeri of the elytra are more distinct than in any of our apterous species.

Length .30 inch.

Mount Yona, Habersham Co., Georgia.

*H. attenuatus*, Lec., (*Amphidora*) Ann. Lyc. V, 137; Class. Col. N. A., p. 240 (*Stenotrichus*).

The type of this species is a badly mutilated specimen found by Dr. Leconte in the desert region around Vallecito, California. From the character of the region and the appearance of the specimen, it must have been dead some years, and exposed to the intense heat of the desert region, has undoubtedly lost to a certain extent its original outline. Several specimens are in my cabinet, from neighboring regions, agreeing in most respects with the type, but having the thorax rather less convex and slightly broader. The specimens, however, vary among themselves to a certain extent.

Thorax longer than broad, truncate at apex and base, sides feebly rounded, margin obtuse. Propleuræ and entire under surface densely and coarsely punctured. Elytra elongate oval, almost sub-cylindrical, humeri rounded; surface with striæ of coarse punctures, and interstices more finely punctured. Antennæ with the outer joints feebly compressed, not shorter.

Length .26-.36 inch.

Occurs at Vallecito, Owens' Valley, and at Camp Grant, Arizona.

*H. faretus*, Lec., Proc. Acad. 1858, p. 74.

Very distinct from all our apterous species, by its broadly oval form, apex of thorax deeply emarginate, and anterior angles prominent, and by its deeply striate elytra. Thorax twice as broad as long, sides feebly rounded, and wider at base; surface densely but not coarsely punctured. Propleuræ and entire under surface coarsely but not sparsely punctured. Antennæ gradually wider to apex, outer joints not shorter. Color black, moderately shining.

Length .20-.33 inch.

Texas.



*H. tumescens*, Lec., New Species, 134.

A species differing abundantly from our only other species of oval convex form, in the sides of the thorax being sub-angulate. It resembles *cereus*, Germ., in form. The broadest portion of the thorax is in front of the middle, in *cereus* nearer the base.

Length .42 inch.

California. Collection of H. Ulke.

The following species are described in the books, and from the very short descriptions are not recognisable.

*H. americanus*, Beauv. Ins. 122, pl. 30, fig. 6.

*H. ? tristis*, Beauv. Ins. 157, pl. 30b, fig. 1.

The former may possibly be *H. undulatus*, Lec., while the latter does not appear to belong to the genus.

#### TRIBE XXXI—MERACANTHINI.

A single genus represents this tribe in our fauna.

#### MERACANTHA, Kirby.

*Meracantha*, Kirby, Faun. Bor. Amer. p. 237.

*M. contracta*, Beauv. (Helops) Ins., p. 122, pl. 30, fig. 6; *canadensis*, Kirby, (*Meracantha*) l. c.; *tumidus*, Mels., (Helops) Proc. Acad. 3, 61.

A common species found over a large part of our eastern regions. Color dark bronze shining. Head deeply inserted, antennæ long, slender, scarcely thicker at tip. Anterior portion of prosternum very short. Anterior femur with an obtuse tooth.

Length .44-.50 inch.

#### TRIBE XXXII—STRONGYLINI.

#### STRONGYLUM, Kirby.

*Strongylium*, Kirby, Trans. Linn. Soc. XII, p. 417.

Two species of this genus are known to American students.

*S. tenuicolle*, Say, (Helops) Journ. Acad. III, 67; Lac. (Strong.) Genera V, 487.

Thorax quadrate or longer than wide. Antennæ slender, last joint yellowish.

Length .56 inch.

Middle and Western States.

*S. terminatum*, Say, (Tenebrio) Journ. Acad. V, 241; Lac. (Strong.) Genera V, 487.

Thorax broader than long, with a shallow longitudinal median groove. Antennæ as in *tenuicolle*.

Length .46 inch.

Western States.

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## UNKNOWN SPECIES.

*Emmenastus rugosus*, Motsch., Bull. Mosc. 1845, 1, p. 76.

*Dysmasthes sahlbergi*, Mann., Bull. Mosc. 1853, 3, p. 265; probably *Amphizoa insolens*, Lec.

*Eurymetopon ochraceum*, Esch., Zool. Atl. IV, p. 8, pl. 18, fig. 20; probably immature.\*

*Centrioptera caraboides*, Mann., Bull. Mosc. 1845, 289; see page 280.

*Cryptadius inflatus*, Lec., Ann. Lye. V, p. 140; type lost.

*Eleodes binotata*, *conjuncta*, *convexicollis*, *latiuscula* and *subtuberculata*, Walk., Naturalist in Brit. Col. II, pp. 328 and 329; probably well known but not recognisable.

*Eleodes subaspera*, Sol., Studi Ent. II, 246. See page 309.

*Eleodes reflexicollis*, Mann., Beiträg. 270.

*Pedinus suturalis*, Say, Journ. Acad. III, 263; probably an *Opatrinus*.

*Paratenetus cribratus* and *gibbipennis*, Motsch, Bull. Mosc. 1868, 192-3.

*Phaleria picta*, Mann., Bull. Mosc. 1843, 277.

*Hoplocephala chalybea* and *collaris*, Cast. et Brullé, Ann. Sc. Nat. 23, 341 and 347.

*Platydema politum*, *quadrimaculata*, *pallens*, *cyanea*, Cast. et Brullé, Ann. Sc. Nat. 23.

*Helops virescens*, Cast. Hist. Nat. II, 235.

*Helops americanus*, Beauv. Ins. 122, pl. 30, fig. 6. — ? *undulatus*, Lec.

*Helops tristis*, Beauv. Ins. 137, pl. 30 b, fig. 1.

*Meracantha rugosa* Cast. Hist. Nat. II, p. 233.

*Strongylium crenatum*, Makl. Monog. 199.

*Tenebrio variolosus*, Beauv. Ins. 163, pl. 31, fig. 8.

*Tenebrio elongatus*, Beauv. Ins. 163, pl. 31, fig. 9.

*Tenebrio rufinasus*, Say, Bost. Journ. 1. 187.

## REMARKS.

*Eleodes lecontei*, Harold, Heft. VI, p. 122, proposed for *sulcata* || Lec.; as the latter is already a synonym no such change is necessary.

P. 1859 Catalogus, Gemm. and Harold, quote by mistake *Eleodes armata*, Lec., and *texana*, Lec., in *Cerenopus*.

*Stenomorpha blapsoides*, Sol., Ann. Ent. Soc. Fr. 1836, p. 491, pl. 12, figs. 9, 11, 12, 14; appears to be *Asida rimata*, Lec., *var.*, pl. 15, fig. 3, of this work.

*Uloma ferruginea*, Say, = *Tribolium ferrug.* See Lec., New Spec., p. 125.

*Helops punctatus*, Gemm. Col. Heft VI, 1870. = *punctipennis* || Lec.

## CORRECTIONS.

Page 260. Six lines from bottom, read *T. perforatus*, Lec., not *punctatus*.

" 264. After the remarks concerning *E. submetallicus*, add "Length .66 inch. Collected by Major Webb, of U. S. and Mex. Bound. Survey."

" 268. In the descriptions of *E. bicolor* and *sodalis*, for "aciculately" read "finely muricately."

" 272. Line 7, for *D.* read *Dr.* The paragraph at bottom of page describing *Z. elegans*, should be at the top, the remarks in large type referring to it and not to *nodulosus*.

" 273. Line 3, for *T* read *P*.

" 283. Line 12, for "six longitudinal costæ" read "three," etc.

" 291. After *B. floridanus*, for "p. 3" read "p. 111." All matter in *Branchus* after and including *B. woodi*, Lec., should be in the foot-note.

" 300. For *BOLETOPHAGINI* read *BOLITOPHAGINI*.

" 303. Last line, for ♀ read ♂.

" 306. Line before last, for *texanus* read *texana*.

" 314. After *E. pilosa*, for *opaque* read *opaque*.

" 319. Line 22, for *basis* read *bases*.

" 328. For *E. osculans* read *C. osculans*.

" 343. Line 6 from bottom, for *anescens* read *ænescens*.

" 369. Line 16, for *Platydema* read *Platydema*.

" 378. Line 10, after "strongly" add "rounded."

## PLATE XIV.

- Fig. 1.—*Craniotus pubescens*, Lec. 1 a, head; 1 b, antenna.
- Fig. 2.—*Stibia puncticollis*, Horn. 2 a, head.
- Fig. 3.—*Trimytis pruinosa*, Lec. 3 a, head.
- Fig. 4.—*Triphalus perforatus*, Lec. 4 a, head.
- Fig. 5.—*Usechus lacerta*, Motsch.
- Fig. 6.—Head of *Triorophus*, Lec.
- Fig. 7.— “ “ *Auchmobius*, Lec.
- Fig. 8.— “ and thorax of *Edrotes ventricosus*, Lec.
- Fig. 9.—*Batulius setosus*, Lec.
- Fig. 10.—*Cnemodus testaceus*, Horn. 10 a, head and antenna; 10 b, anterior leg.
- Fig. 11.—Thorax of *Epitragus arundinis*, Lec.
- Fig. 12.—Head of “ *canaliculatus*, Say.
- Fig. 13.— “ “ “ *acutus*, Lec.
- Fig. 14.— “ “ “ *arundinis*, Lec.
- Fig. 15.—*Aræoschizus regularis*, Horn. 15 a, thorax of *A. costipennis*, Lec.; 15 b, thorax of *A. sulcicollis*, Horn;  
15 c and d, thorax and front leg of *A. armatus*, Horn.
- Fig. 16.—*Dacoderus striaticeps*, Lec.
- Fig. 17.—*Eleodes granosa*, Lec.
- Fig. 18.—*Anepsius delicatulus*, Lec.
- Fig. 19.—*Glyptotus cribratus*, Lec.
- Fig. 20.—*Sitophagus planus*, Lec.
- Fig. 21.—*Polypleurus nitidus*, Lec.
- Fig. 22.—*Alæphus pallidus*, Horn.
- Fig. 23.—*Alaudes singularis*, Horn. 23 a, underside of head; 23 b, antenna.
- Fig. 24.—*Notibius gagates*, Horn. 24 a, anterior tibia of male and female of *N. puberulus*, Lec.; 24 b, ditto *N. sul-*  
*catus*, Lec.; 24 c, ditto *N. puncticollis*, Lec.; 24 d, ditto *N. granulatus*, Lec.
- Fig. 25.—Anterior tibia of *Cerenopus concolor*, Lec.
- Fig. 26.— “ “ “ *cribratus*, Lec.
- Fig. 27.— “ “ *Argoporis bicolor* (Lec.)
- Fig. 28.—Hind femur of male of *Argoporis bicolor* (Lec.)
- Fig. 29.— “ “ “ “ “ *sulcipennis* (Lec.)
- Fig. 30.— “ “ “ “ *Cerenopus concolor*, Lec.
- Fig. 31.— “ “ “ “ “ *cribratus*, Lec.
- Fig. 32.—Head of *Cerenopus concolor*, Lec.

## PLATE XV.

Fig. 33.—Head of *Argoporis bicolor* (Lec.)

Fig. 34.—Side view of *Liodema*, Zimm.

Fig. 35.—*Scotobænus parallelus*, Lec.

Fig. 36.—*Eupsophus castaneus*, Horn; last two joints of antenna near fig. 35.

Fig. 37.—Thorax of *Cratidus osculans*, Lec.

Fig. 38.— “ “ “ *rotundicollis*, Horn.

Fig. 39.—*Embaphion planum*, Horn.

Fig. 40.— “ *elongatum*, Horn.

Fig. 41.— “ *depressum*, Lec.

Fig. 42.—*Rhipidandrus flabellicornis* (Sturm); 42 a, antenna.

Fig. 1.—*Asida gibbicollis*, Horn.

Fig. 2.— “ *marginata* (Lec.) (*var. sub-cylindrica*).

Fig. 3.— “ *marginata* (Lec.) *var.*

Fig. 4.— “ “ (*var. rimata*, Lec.)

Fig. 5.— “ *ægrola* (Lec.)

Fig. 6.— “ *semilævis*, Horn.

Fig. 7.— “ *actuosa*, Horn.

Fig. 8.— “ *confluens* (Lec.)

Fig. 9.— “ *sexcostata*, Lec.

Fig. 10.— “ *lirata*, Lec.

Fig. 11.— “ *lecontei*, Horn, (*costipennis* || Lec.)

Fig. 12.— “ “ “ (*var. compressa*, Horn).

Fig. 13.— “ *captiosa*, Horn.

Fig. 14.— “ *parallella* (Lec.)

Fig. 15.— “ *bifurca* (Lec.)

Fig. 16.— “ *consobrina*, Horn.

Fig. 17.— “ *luctata*, Horn.

Fig. 18.—*Microschatia sulcipennis*, Lec.

Fig. 19.—*Astrotus contortus*, Lec.

Fig. 20.— “ *regularis*, Horn.

Fig. 21.—*Eusattus erosus*, Horn.

Fig. 22.— “ *costatus*, Horn.

Fig. 23.—a, anterior tibia *Eusattus*; b, *Cœlus*; c, *Coniontis*.

Fig. 24.—a, mesosternum *Centrioptera muricata*, Lec.; b, ditto *asperata*, Horn; c, terminal antennal joints *Centrioptera*; d, ditto *Cryptoglossa*.

Fig. 25.—*Centrioptera variolosa*, Horn.









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